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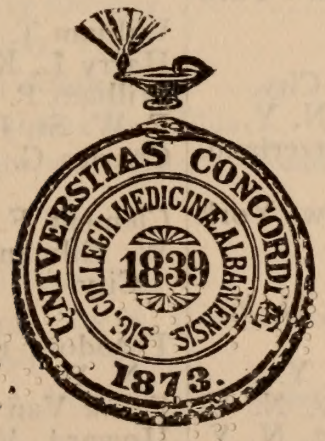
ANDREW MAC FARLANE, M. D.,

AND

J. MONTGOMERY MOSHER, M. D.

VOLUME XVIII.

'Ασφαλὲς καὶ ἔμπεδον ἔστω τὸ σὸν ἔδος. 'Εκ σκότου μὲν ἔξαλε φάος, ἐκ δὲ πάθους ἀναψυχήν.



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Original Communications.

For the ANNALS.

WHAT THE COLONY SYSTEM MEANS IN THE CARE AND TREATMENT OF EPILEPTICS.

BY WILLIAM P. SPRATLING, M. D.,

Medical Superintendent, Craig Colony.

The Colony system in the care and treatment of epileptics had its origin near Bordeaux, France, forty-nine years ago. John Bost, a clergyman, conceived the plan of grouping charity dependents in cottages where home life, with all its environments and conditions, could be provided and maintained. Twenty years later, Pastor Von Bodelschwind began the development of the now celebrated Bethel Colony at Bielefeld, in the town of Hanover, the Province of Westphalia, Germany. As Bethel Colony so fully exemplifies to-day the highest existing type of this class of rapidly growing institutions for the care and treatment of epileptics, and as Craig Colony is being developed along similar lines, I will note briefly some of the facts in connection with this great German charity, making especial reference to what it has accomplished in the scientific treatment of this wide-spread and grievous malady.

Bethel Colony, pronounced by the Germans as though spelled Batel, grew from a single cottage that harbored four inmates. In 1887, at the time of Dr. Frederick Peterson's visit to the Colony, its epileptic population numbered 800, a fact stated by him in a description of the Colony published in the *Medical Record*, upon his return to this country. At the time of my visit, January, 1895, when I spent some weeks studying the inherent features and methods of the institution, the total population numbered 3,200 souls, 1,400 of whom were epileptics,— a gain of 600 in its epileptic population in seven years, and which gain was limited strictly by lack of residence accommodations for a greater number. I asked to see the books in

which applications for admission and inquiries about the Colony were filed. Covering a period of twenty-six years and coming from all parts of the inhabited earth, they numbered 204,000.

The fame of Bethel Colony is not limited by territorial restrictions. It has crossed all seas and penetrated into all countries. I saw patients from England, Ireland, Scotland, Wales, Norway, Sweden, Russia, Italy, Switzerland, North and South America and Africa. The day I reached the Colony the superintendent placed in my hands a letter just received from an applicant in Texas, begging admission to the Colony. It was thought she might be admitted to the Craig Colony.

One of the amusing things I saw in this matter-of-fact, hard-working, ever-going, persistent and stolid community — and the incident seemed to possess humor for no one in the party save myself, of which I was the only American — was a ponderous and dignified German professor of music whose magnificent physique and commanding presence would have graced a ruler's chair, patiently and persistently teaching two kinky-headed little daughters of darkest Africa the mystery of extracting harmonious sounds from a well-worn piano.

At Bielefeld they do all things, and by the application of that same forceful and continuous action that makes a falling rain-drop wear a stone away, they do, in time, all things well.

Bethel Colony has thrived beyond the most ardent expectations of its founder, and the growth goes rapidly on. And why? For two reasons:

1st—The principles underlying its origin and development were correct.

2nd—The principles underlying its origin and development being correct, were faithfully carried out.

As to results: "How many patients do you cure?" I asked of Dr. Huchzemair, the chief physician.

"Six per cent."

"How do you determine that?"

"In this way," he replied, "We do not regard a patient as cured until the attacks have been stopped for four years. At the end of two years' freedom from attacks at the Colony, we permit the patient to go to his home. He is then held under observation by letter two years longer. If then, at the end of four years all told, he has had no attacks, we regard him as cured."

"What per cent. beyond the six per cent. that you cure do you benefit in any appreciable degree?"

"Fully sixty per cent., to the following extent: We get a patient here who is having attacks daily, or two or three in a day, severe in character. In from one to three years, sixty per cent. of such cases are so greatly benefited, their attacks being reduced to one in two or three weeks, and so mild in character as scarcely to interfere with the patient's normal actions, that such patients are capable of returning to their homes and taking up some vocation. They are not cured, however, and unless they continue to rigidly observe such habits of life as they were obliged to observe at the Colony, they will become worse again."

Briefly stated, this is what the German Colony for epileptics is doing, and the manner in which it is being done will be described in the concrete in connection with the description of the Craig Colony, where the methods of the German Colony are largely observed.

The Colony for epileptics at Sonyea, Livingston county, N. Y., was founded by legislative enactment April 24, 1894, for the "humane, curative, scientific and economical treatment and care of epileptics, exclusive of insane epileptics." By request of Governor Flower, the name Craig Colony was adopted in honor of the late Oscar Craig, a commissioner of the State Board of Charities and an energetic factor in influencing charitable legislation. The site at Sonyea was purchased of the Shakers, otherwise known as the "United Society of Christian Believers." It embraces 1872 acres of fertile, well-watered land, diversified in character. Five hundred acres of it lie in the lowlands of the far-famed Genesee Valley, and so productive is the soil of this particular area that I will not tempt credulity further than to say that a yield of 300 bushels of potatoes or 100 bushels of corn to the acre is not regarded as an unusual crop. Along the western margin of the estate lies a strip of rich, sandy soil, exceedingly valuable for truck gardening purposes, while along its eastern border is a strip of clay from which the finest brick and drain tile can be made, and which is about to be utilized for these purposes. Six hundred acres of the southern end of the estate remain covered by the original forest, most of the timber of which is hard wood. In the future industrial development of the Colony this timber can be used to great advantage in the manufacture of furniture and wooden-ware of various kinds.

The section of the Colony that will comprise the future residence portions is sufficiently elevated to admit of easy drainage and disposal of sewage. These are important factors.

The water supply is ample for a population of many thousands and comes from two sources—from Kishaqua creek, to be used for fire protection, bathing and sanitary purposes generally ; and from springs that have been preserved and protected for fifty years. The spring water is used for drinking and cooking purposes only.

By this it will be seen that the Colony site embraces all the prerequisites so necessary for the life of such an institution, and they are of such value that I will briefly reiterate them :

1st. A large tract of fertile land capable of producing the greatest yield with the minimum expenditure of labor, and so situated that if future demand requires it, it may be readily enlarged.

2d. A soil diversified in character for the best growth of diversified crops.

3d. Provision for procuring an abundance of good, wholesome water.

4th. Its topography is such as to admit of easy and perfect surface drainage and of the disposal of sewage.

The Colony has an added value in being tolerably remote from centers of civilization, thus lessening, in a great measure, the possibility of the epileptic's opportunity for indulging in depraved tendencies and destructive tastes. A better foundation upon which to build the vast and complex superstructure that is to follow could not have been provided by nature.

The first step in providing the artificial superstructure will be in the construction of houses. Institutional ideas and models must be studiously avoided, and homes must take the place of great buildings in which hundreds of persons live.

Dormitory buildings or houses for patients at the Colony should be limited in capacity to from ten to twenty or twenty-five persons. In proportion to the increasing social status of the patient in the upward grade, will be a corresponding decrease in the number to be put under one roof. Private and semi-private patients should live in the smaller houses, other things being equal, while indigent patients will occupy the houses of the greater capacity. But these are conditions that are regulated only by the actual condition of each individual case.

In households having twenty patients, two paid employes would

be required, a cook and a nurse. A cook for a single household can be secured for less wages than is usually paid charge nurses in State hospitals. Most of the patients, most of the time, would be able to work, and would do the great bulk of the housework. Two or three could do this, leaving the remainder free for outdoor work in the field, in the garden and in the various shops.

The Craig Colony has asked for an appropriation of $120,000 of the coming Legislature, to be used for dormitory buildings, the *per capita* cost of construction being put at $500 only, a low figure in comparison with the cost of most charitable institutions that have been built in this State.

Large numbers of epileptics can never be satisfactorily or even safely massed under one roof. They are irritable and fault-finding to the last degree, and bodily harm to each other and to the nurses who have the immediate charge of them, is always to be feared when the number massed together is large.

Houses, then, that embrace home features, that admit of easy supervision and that make possible a classification, are the first essentials demanded after a suitable site is found. To the present time it has not been possible to sustain the colony idea at the Craig Colony in this respect, by reason of the fact that all buildings now occupied are old, having been acquired from the Shakers, and are largely unfitted for the purpose to which they have been put.

Sixty-five male patients now live in a frame building that should not be made to accommodate more than twenty-five, and the evils that constantly arise out of this condition are forcibly apparent every day.

After the establishment of the patient in the house in which he is to live, his treatment along three lines is begun, viz., medicinal, dietetic, moral. He is critically examined by a physician as to the nature, type, and possible cause of his disease, and the examination is searching and lasting. As thoroughly as possible his ancestry is inquired into. He is searched closely for stigmata of degeneration, and experience teaches that he is a fruitful field for study along this line. So frequently and in so marked a degree does he bear evidences of degeneracy that such fact might be used as an additional argument why he needs a home and the proper custodial care in preference to any other form of care and treatment less constant and lasting. All that can be done for him through the agency of drugs is done, and so broad is the field of practical therapeutics in this

disease, and so familiar is it to physicians, that I will not rehearse it here. The dietetic treatment, which consists in the regulation of the diet, has come into prominence within comparatively a recent period, and has gone hand in hand with the medical treatment. It is a powerful factor in the treatment of epilepsy.

In his home the epileptic is an object of sympathy, and his diet is made to gratify his desires. Naturally, sympathy here supplants better judgment and reason, and, unwittingly, the afflicted child is often assisted in acquiring a deeper fixation of his disease. It is not possible, in private homes, to enforce dietetic measures; at the Colony, it is. Only such food is prepared that the epileptic may eat with impunity. It is selected and prepared under medical supervision and direction, and at the Craig Colony the most excellent results have been obtained, as the result of rigid adherence to the best dietetic principles. And in this connection comes the great value of the scientific and economic features of a large agricultural plant for such a colony. The dietary is composed mostly of breadstuffs, fruits, cereals, milk, eggs and vegetables; and by his own labor, so valuable to him as a therapeutic measure in the treatment of his disease, the epileptic can produce just what food he should consume.

The moral treatment of epilepsy is in its infancy. Its value is without measure, and under no other than the Colony system can it be obtained and carried out. Just what it means, I can do no better than to quote from my last annual report to the Board of Managers of the colony :

"While medicine plays a most conspicuous and important part in the treatment of epilepsy, our belief is constantly growing that the moral treatment has a still broader field of usefulness and value. Too much stress cannot be laid on the importance of requiring every epileptic, whose physical condition will admit of it, to perform some kind of manual labor, and to do it systematically and continuously. Most of these people should be made to return, as far as possible, to a primitive condition of life — to a condition that eliminates the action of certain harmful stimuli incident to modern civilization that prompt nervous matter to abnormal action. It is a suggestive and hopeful fact that, coincident with the gradually increasing number of hours spent by patients in systematic and useful labor, has been a corresponding decrease in the number and severity of seizures, and such decrease is observed to be most marked when individual interest in the work performed is greatest.

"Work is ennobling and elevating. It fosters and cultivates feelings of independence, manhood and pride, and it should be our duty to instill these principles, as far as possible, into the beneficiaries of this helpful charity. All the good arising out of labor performed by the epileptic is for the epileptic. It is part value for greater value received."

But the moral treatment means more than labor. A school is provided in which the younger epileptics spend two and one-half hours a day. They are taught the practices that produce physical development; and, as far as possible, the education they get is put into the ends of their fingers. Tactile corpuscles and muscles with them can acquire more easily and retain more readily than can their gray matter. Besides, the value of such an education to them is infinitely greater than one purely technical. They are taught to read, to write and to do simple mathematical problems.

Religious services and amusements of a character best adapted to their condition are provided. They enjoy great freedom, being permitted to go at will about the Colony premises.

METHOD OF COMMITMENT.

Epileptics in indigent circumstances, and residents of the State, are admitted to the Colony upon the official application of the Superintendent of the Poor of the county in which the patient lives. Appended to and a part of this application is a physician's certificate in which is set forth the fact that the person is an epileptic.

Private patients are not being received yet. All patients, in the future, coming from States other than this State, must come as private patients.

The law requires the Managers to apportion the admissions equally among the counties of the State. There being, at the time this apportionment was made, 800 dependent epileptics in the State, and the capacity of the Colony being for 200, each county, on an equitable basis, was entitled to send one-fourth of its dependent epileptics to the Colony.

RESULTS AT THE CRAIG COLONY.

The first fifty cases received at the Colony had, during their first month at the Colony, 708 seizures. The same fifty cases, after five months of treatment, had, collectively, during the fifth month, 315 seizures, a reduction of 55 30-59 per cent.

The value of farm and garden produce raised on the Colony lands during the year was $14,230.20, which sum was equal to 50 per cent. of the entire cost of maintenance from the day the care and treatment of patients commenced until the end of the fiscal year, September 30, 1896.

These two facts illustrate by figures two important things:

1st. The value of such a plant in the scientific treatment of epilepsy.

2nd. The economy of the scheme, the demonstrating of which has more than a money value, in that it puts into the epileptic's hands a mighty weapon with which to fight his unwelcome foe.

CRAIG COLONY, SONYEA, JAN. 1, 1897.

SYRINGO-MYELIA,

A CLINICAL STUDY OF THREE CASES.

BY ANDREW MACFARLANE, M. D.,

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Among the obscure forms of nervous disease which still puzzle the clinician, and are at times not diagnosticated, is Syringo-myelia. This disease, Erb in Ziemssen's Encyclopedia classified under the *rara et curiosa;* Mills and Lloyd in Pepper's System of Medicine, 1886, considered the condition known as Syringo-myelia to be of exclusively pathological interest, and the president of the Neurological Society of New York, in the discussion of a case in 1890, said, "The only way to make a diagnosis of Syringo-myelia was to make an autopsy."

This difficulty of diagnosis, though still present, has practically disappeared in those cases where the symptoms are at all characteristic, rendering the diagnosis a comparatively easy problem. The reason for the obscurity in Syringo-myelia becomes evident when the history of the recognition of the disease and the underlying pathological condition are considered.

As long ago as 1688 Brunner [1] accidentally found in a child with hydrocephalus a large cavity in the spinal cord extending from the fourth ventricle to the dorsal vertebrae. Morgagni,[2] about fifty years later, found by chance this same condition in a Venetian fisherman. In the beginning of this century Portal [3] described this lesion in four cases, two of which had severe clinical symptoms. Ollivier [4]

1. Bonet's Sepulchretum. Edit II, 1700.
2. Advers. Anatom. VI, Lugd. Batav., 1740.
3. Cours d'anatomie Médicale T. IV, 1804.
4. Ollivier — De la moëlle épinière et ses maladies 3 Edit 1824.

in 1820 claimed that the presence of a persistent central canal or a cavity in the cord was pathological, contrary to the opinion that it was a normal condition, and gave to it the name Syringo-myelia (*συριγξ* a pipe and *μυελος* marrow).

It remained a pathological curiosity investigated and described by Stilling,[1] Waldeyer, Landau,[2] Lenhossek[3] and Gull[4] until Duchenne,[5] in the study of progressive muscular atrophy, noticed some cases which showed the astounding condition that they did not feel the strongest electrical current nor the hot iron. This anæsthesia was usually limited to the upper extremities, and was due, in his opinion, to a lesion of the posterior horns. No further advance was made in the clinical knowledge of this disease, although the condition was being thoroughly studied by pathologists, until in 1882 Kahler[6] and Schultze[7] almost simultaneously published papers showing that under certain conditions the lesion could be diagnosticated. From this time the number of clinical cases reported increased very rapidly, especially in Germany and Austria.

In this country Starr[8] published in 1888 the first paper on Syringo-myelia, which was soon followed by those of Booth,[9] Hun,[10] Upson,[11] Van Gieson,[12] Jeffries,[13] Shaw,[14] O'Connor[15] and others.

The earliest opinion attributed the origin of the cavities in the spinal cord to a structural defect, the failure to close of the spinal canal; later it was thought that these cavities were due to an enormously dilated central canal. Such lesions often produced no symptoms, as the elements of the cord adapted themselves to the conditions present, and were usually otherwise normally developed. Leyden,[16]

1. Neue Untersuchungen über den Bau des Ruckenmarkes, 1859.
2. Baumler, Ueber Hohlenbildung im Rückenmarke, 1887.
3. Oesterr, Zeitschr. f. prakt. Heilkunde, 1859.
4. A case of progressive muscular atrophy, Guy's Hosp. Rep. 1862.
5. Traite d'electrisation localisée, III Edit., 1847.
6. Paraplegia cervicalis mit eigenthümlicher sensibilitäts störungen, Prag. Medic. Wochenschr. 1882.
7. Ueber Spalt, Höhlen - und Gliombildung im 'Rückenmarke und, der medulla oblongata Virch. Arch. Bd. 1882.
8. Am. Journal Med. Sciences, 1888, XCV.
9. Prog. Musc. Atrophy with anæsthesia, N. Y. Med. Record, 1888.
10. A case of Pott's disease, presenting in the arms symptoms resembling those of locomotor ataxia, and in the legs those of spinal spastic paralysis, Medical News, 1888.
11. N. Y. Medical Journal, 1889, I.
12. Journal of Nerv. and Mental Diseases, 1889, XVI.
13. Journal of Nerv. and Mental Diseases, 1890, XVII.
14. N. Y. Medical Journal, 1890, LII.
15. Hahne. Monthly, Phila., 1890, XXV.
16. Hydromyelus und Syringo-myelie, Virch. Arch., 1876.

however, claimed that this congenitally imperfect tissue about the spinal cord was a good matrix for inflammatory swelling or the development of gliomata, which, by contraction or by softening, breaking down and absorption, caused a destruction of nerve tissue with the formation of cavities and the production of clinical symptoms. All cavities were, therefore, directly or indirectly due to embryonal defect.

Schultze [1] thought the cavities were due to the breaking down of gliomata, or to a condition of gliomatosis, not necessarily developed from the central canal or the result of a developmental defect. Although the tissue about the central canal is the best matrix for the development of this condition of gliosis, still it could develop in the horns or columns of the cord.

Langhans [2] and Kronthal [3] have proved that cavities may result from pressure due to a tumor of the brain or spinal column.

Strümpell, [4] Schmaus, [5] Krewlicz, [6] Oppenheim [7] and others have demonstrated by cases with autopsies that cavities may also be due to hemorrhages within the cord, the result of trauma.

The great number of cases, however, in which there is no history of a trauma, prove that the trauma has probably been simply the exciting cause in abnormal tissue predisposed to the development of new growth. Then, too, the vascularity of neoplasms and inflammatory tissue would predispose to hemorrhages. This condition, however, has been artificially produced by Eichhorst and Naunyn [8] in newly-born dogs by contusion of the spine shortly after birth.

Obersteiner [9] and Schmaus have shown that cavities may develop from destruction of nerve tissue without hemorrhage after spinal concussion, although no injury is done to the spine.

Joffroy and Achard [10] attribute the condition to an obliteration of the vessels of the gray substance of the cord with a resulting diffuse sclerosis, and called it "myelite cavitaire." Although many causes are given, it seems as if a congenital defect was the great underlying cause.

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1. Virch Arch. B'd 87, 1882 and Bd. 102, 1885.
2. Virch Arch. B'd 85.
3. Neurog. Centralblatt, 1883.
4. Arch. f. Psychiat, 1880.
5. Virch. Archiv. B'd 122.
6. Arch. f. Psychiat, XX.
7. Arch. f. Psychiat, XXV, 1893.
8. Archiv. f. exper. Patholog und Pharmak., 1874.
9. Wien. Jahrbuch, 1879.
10. Arch. de Physiologie, 1887.

Cavities in the cord are usually centrally located, though they are occasionally found behind the posterior commissure or even in the posterior horns. Their length varies from a few millimetres or centimetres to the entire extent of the cord, and their width from one to ten millimetres. The greatest diameter is at the cervical enlargement and the lateral, posterior, and even rarely the anterior columns may be involved. Their shape is usually round, oval or slit-like, though it may have the most irregular form. They contain a thick serous fluid, which may be colored by the admixture of blood.

A pathological division has been made into those developed from the central canal during embryonic life or later, and characterized by the presence of a complete or incomplete layer of epithelium—hydromyelia—and those lying outside of the spinal canal and having no epithelial layer—syringo-myelia.[1] Gowers[2] doubts the significance of the epithelial layer, and holds that this differentiation is unnecessary and often misleading. Schlesinger[3] states that in all his cases of primary gliosis, sections were found in which the cavities were partly lined with epithelium, and he believes that the epithelial lining is probably completely absent in only a very small fraction of the cases. He has also examined cases in which one portion of the cavity was completely lined with epithelium, a true hydromyelia, while in another portion the epithelial lining was absent, a syringomyelia. At best this classification is purely pathological and has no clinical value.

The three following cases, the first a patient in St. Peter's Hospital, Albany, N. Y., and the other two examined by the writer in the Klinik Kahler in Vienna, show characteristically the symptoms of this disease :

C. B., male, aet. 30, single, born in Liverpool, England; came to this country when 16 years of age.

Father well and living and mother died of an acute lung disease of seven days' duration. Six brothers living and in good health, but are rheumatic. Three sisters living. One brother died in infancy with convulsions and one sister is dead. No history of any nervous disease in family. Patient had measles in his childhood, typhoid fever three years ago and three attacks of gonorrhea, but denies ever having had a chancre. Drank alcoholic stimulants to excess when a young man, but in recent years only moderately. Has used tobacco to excess. At the age of seventeen he began to work at cracker baking

1. Chiari. Zur Pathogenese der Syringomyelie. Prager Zeitschr. f. Heilkunde, 1883.
2. Diseases of the Nervous System, vol. I, edit. 2.
3. Die Syringomyelie, 1895. Much of the historical data has been taken from this valuable work.

and continued at that work for a short time, when he went to sea for ten years. He gave up this work three years ago because it was too laborious. Since then he has had a number of different employments—steward on steamers, helper and waiter in restaurants, etc., but has not held any of them for any length of time because his hands were clumsy and very often allowed dishes to fall. On questioning patient he said he remembered about ten years ago while on shipboard he did not keep his balance in heavy weather as he should have done, also that he began to have sores, felons, abscesses and cracking of his hands, and later noticed that he began to have some difficulty in buttoning his shirt behind, and some time later that his sense of touch was not acute, and that in the winter his fingers easily became numb, although he did not suffer from the cold. Remembers indistinctly that when a small boy he was struck upon the back and was laid up for a day or two with the injury. The patient came into the surgical dispensary of St. Peter's Hospital June, 1896, for the treatment of a small ulcer about an inch in diameter at the junction of the middle and lower third of the left leg. It was noted that he walked unsteadily and he was therefore referred to the medical division for further observation. The patient had apparently no knowledge of the condition discovered.

Physical Examination.—Medium height and build; skull symmetrical; hair turning gray, more marked on left side; right side of face possibly a little more prominent; nose pointed to the right side; left side of face perspires very freely while the right side is quite dry; right side is also paler than the left side; atrophy of shoulder muscles—trapezius, deltoid, supraspinatus, pectoralis major on both sides, but more marked on right side; marked thickening and roughening of hands and finger joints; hands cold and cyanotic; nails cracked and deformed; scar of felon on right thumb and many scars of burns and frost bites on fore arms and hands; large scar of an abscess on post. aspect of right shoulder and a scar on back of neck; lateral curvature to the left, extending from sixth dorsal to second lumbar vertebra; slight compensatory curvature to right in lower cervical and upper dorsal region.

Pupils small, symmetrical and react to light and accommodation. The examination of the eyes by Dr. George S. Munson was negative. On closing eyes tightly and showing teeth the folds seemed a little more prominent on left side. The tongue was protruded slightly to the right side. Masseters seemed normal and symmetrical. Pharyngeal, and especially laryngeal reflexes diminished, and on left side of pharynx complete thermic anæsthesia with presence of tactile æsthesia. Loss of taste on left side of tongue and marked diminution in sense of smell by left nostril. Hearing markedly diminished on both sides, equally on left side where there is a chronic dry catarrh, with the right side which is affected with chronic suppurative middle ear disease with perforation of the drum.[1]

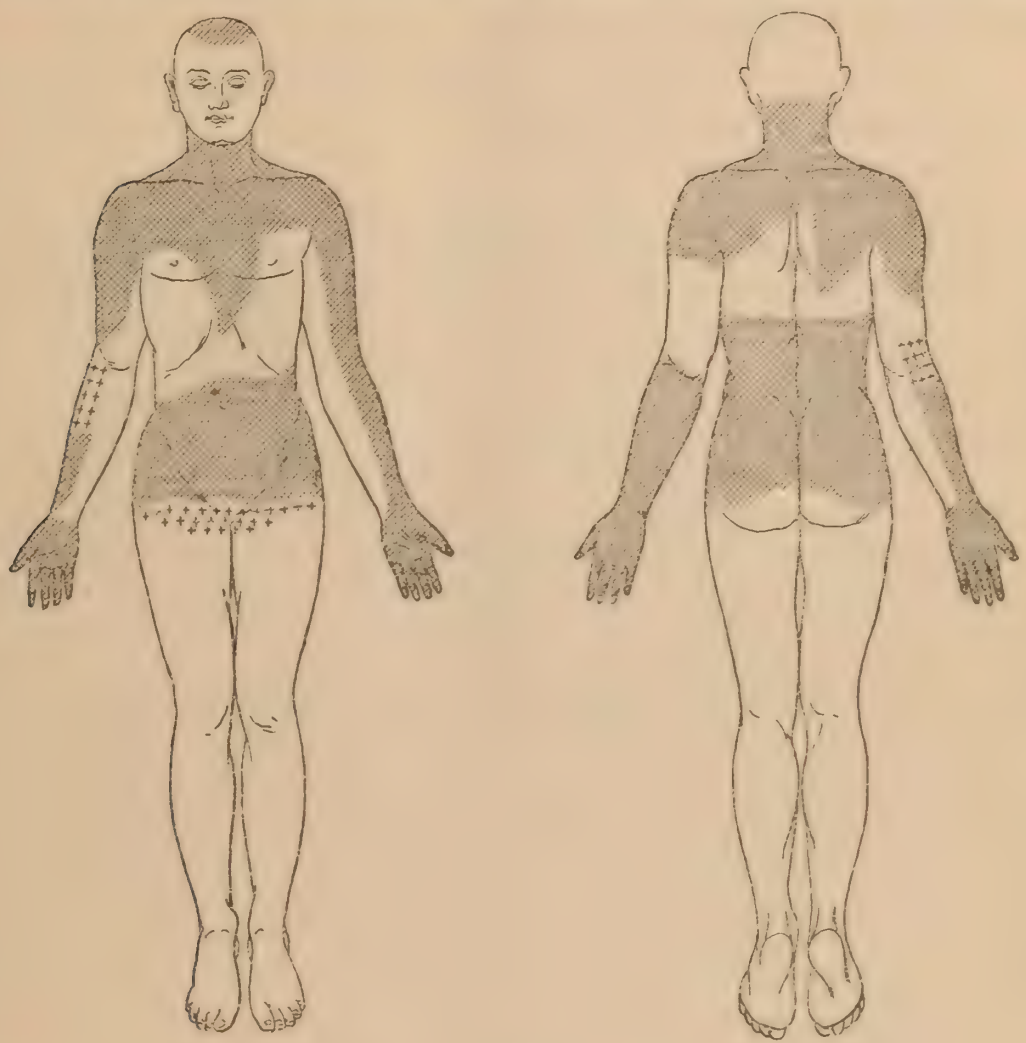
His gait is uncertain, wavering of a slightly spastic character, with Romberg's symptom somewhat marked. No marked ataxia present, but he cannot touch the tip of the nose exactly with the tip of his index finger, nor can he bring the tips of his index fingers exactly together. Localizes, with eyes closed, position of toes and legs without difficulty. The grip of both hands is weaker

1 The examination of throat and ear was kindly made by Dr. C. F. Theisen.

than normal, the forearm can be extended in spite of patient's opposition, and he is unable to lift right arm above a horizontal position. The electrical reaction is present in the atrophied muscle, but apparently diminished in intensity.

The atrophy present in muscles of the hand is concealed by the thickening and roughening of the tissues, but there is no reaction of degeneration. Upon tapping the shoulder muscles fibrillary contractions are produced.

Sensory Examination—Tactile sensation is slightly diminished as he usually



CASE I.

Shading — Area of thermic anæsthesia and analgesia.
Crosses — Area of analgesia.

feels the gentle stroke of a handkerchief, except across the abdomen where tactile sensation is markedly diminished. Analgesia in areas marked by crosses, and he suffers no pain when struck deeply with a pin although the tactile sensation is present. Winces when his eyes are open but shows no painful feeling when they are closed. Analgesia and complete thermic anæsthesia in the marked areas (*Vide* Chart I), so that he cannot distinguish between a test tube filled with boiling water and one filled with melting ice. No hyperæsthesia except that the spine is sensitive to tapping about the level of the vertebra prominens. Plantar reflex present.

Knee jerks increased more markedly on left side where there is a slight ankle-clonus; cremasteric and umbilical reflexes absent; no reflexes could be obtained in the upper extremities.

Bowels usually constipated. Urine negative. Passes urine about five or six times a day in the summer, but in cold weather has to pass it almost every hour, and occasionally it passes without his knowledge.

His mind seems clear though he says he does not remember well. There is no difficulty in deglutition or phonation.

J. P., male, aet. 42. Worker in mother of pearl, Austria. Entered the General Hospital, Vienna, May 1st, 1891.

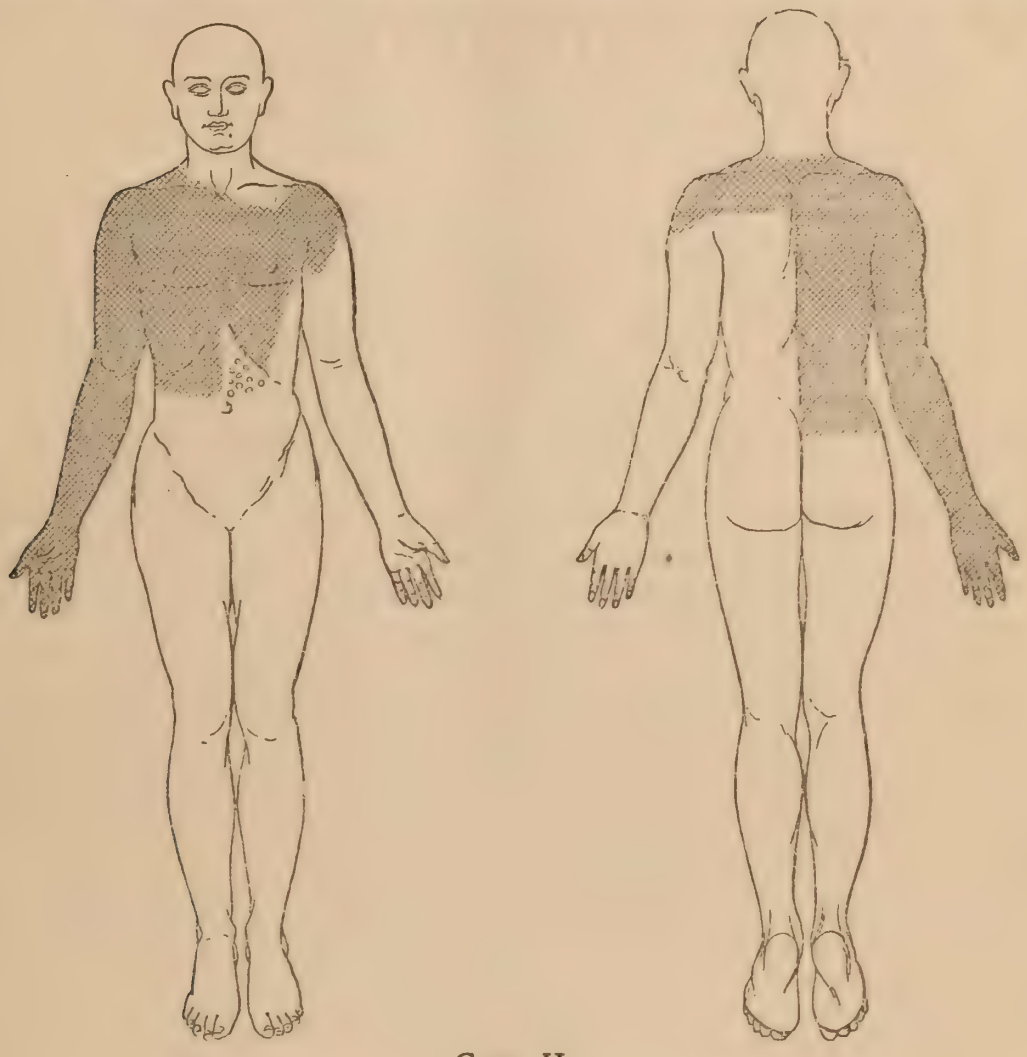
His parents were healthy.

In 1860 he had small-pox ; in 1873, injured while at work his left eye, from which injury there remains a thick, white scar; in 1880 a similar accident occurred to right eye, and in this same year he had a painful swelling of the phalanx of the second finger, probably caries. He was an inmate of the Rudolph Hospital for two years, apparently with catarrh of the apices of the lungs. Scars are present on his left hand resulting from injuries during his work. Patient stated, as the first symptom of his present affection, that he had to give up his work four years ago because there was a loss of feeling in his hands, which he attributed to rheumatism. Went into the country for five months, where he improved, and his sense of feeling returned so that he was able to resume and follow his occupation until the autumn of 1890. He noticed, however, that he couldn't control as well as formerly his right hand, which showed a gradually increasing weakness. After a cold, in 1889, his condition grew worse and twitchings occurred in right leg, especially during bad weather and when he was in the bath. Had also noticed in the beginning that he perspired freely, even when cold, and more markedly on the right side. For the last two years he has coughed irregularly without expectoration, but with increased saliva, and during this time his speech has become indistinct and hoarse. Last winter his shoulder muscles became weak, contractures of the phalanges of the right hand occurred, and sense of feeling was lost over his chest. His bowels and bladder have always been regular. Patient was a moderate drinker, and had been very strong.

Physical Examination.—Stocky build ; powerful bony structure ; skull hydrocephalic and very thick ; right lateral curvature. Perspiration marked on right side of face and neck as low as the clavicle. Atrophy of left eye, scar, with adhesion of the iris on right eye ; pupil reflexes could not, therefore, be determined; nystagmus by lateral deviation of the eyes.

Nothing abnormal in motor or sensory facial nerves on right side of tongue ; marked fibrillary contractions, decrease in size with flabbiness of same side, both visible and palpable. Movement of soft palate slow but symmetrical, uvula very long, no abnormality in reflexes, complete motor paralysis of left side of larynx. Upon sitting up the abnormal position of the shoulders is striking. Projection of the inner border of the scapulæ due to atrophy of the trapezius more marked on the left side; upon elevation of the shoulders a remnant of the trapezius can be felt on the right side; the inferior portions of

the trapezius are also weak. When the shoulder blades are brought together the rhomboids alone contract, elevating the shoulder blades. If the shoulders are elevated, the levator scapulæ cannot be felt, due apparently to the powerful contraction of the rhomboids; but instead there is a depression. The sterno-cleido-mastoids contract equally well in raising the head; but show evident atrophy. Platysma myoides are well developed. The muscles of the arm are normal. The right hand is a typical claw hand. On the interior surface are



CASE II.

Shading — Area of thermic anæsthesia and analgesia.
Small circles — Area of anæsthesia.

scars and callosities which contribute to the contractures. Interosseous spaces are sunken, the thenar and especially the antithenar eminences are much atrophied. The walk of patient is spastic. Triceps reflex on right side very weak, on left side stronger; bone reflexes absent. Stiffness on passive motion, reflexes of lower extremities increased and ankle-clonus readily obtained on both sides.

Sensory Examination.—Face and neck normal for all forms of sensation. Tactile sensation present, painful and thermic sensation absent in the region of the left shoulder. The right shoulder, arm and hand feel only coarse tactile

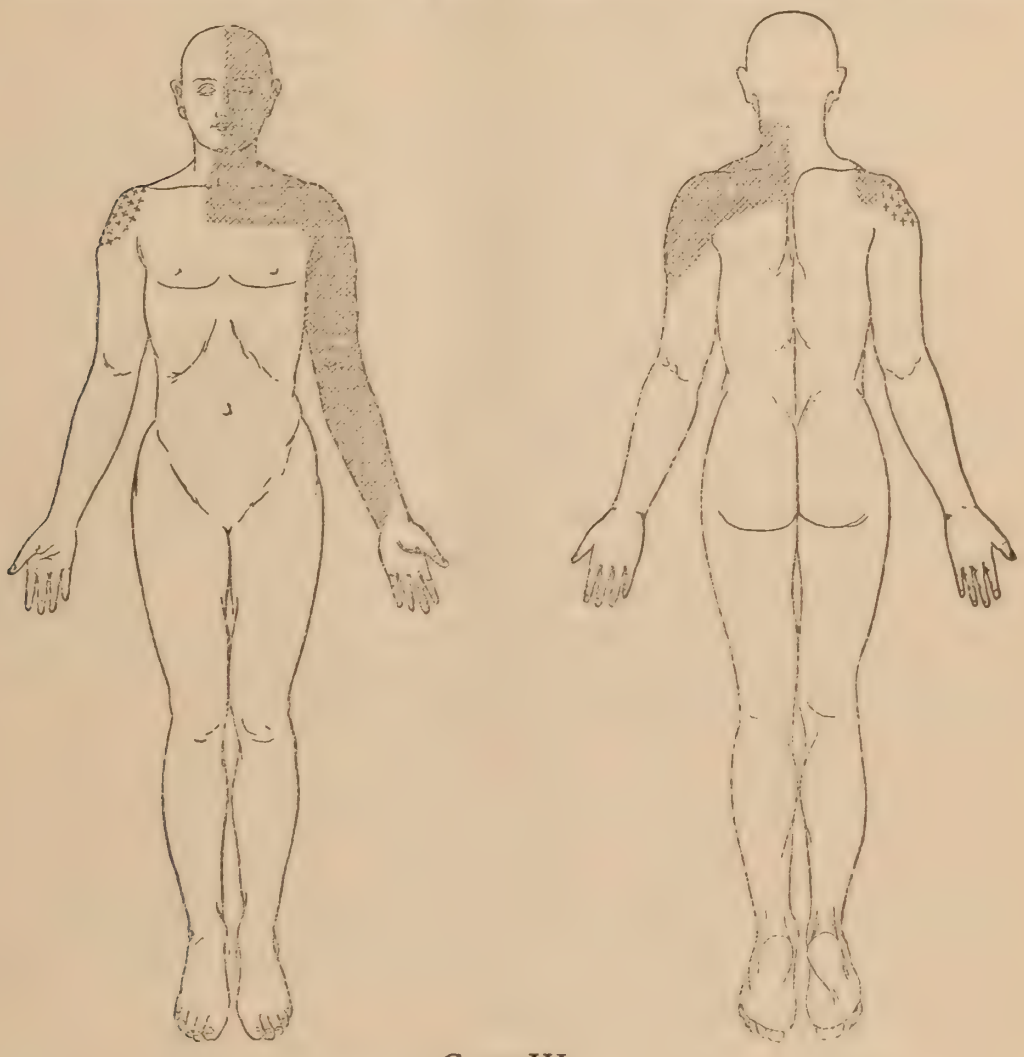
sensations, while feeling for pain is diminished, and that for temperature is absent. Right side of chest and abdomen to the level of umbilicus appreciate tactile sensations only, and not at all painful and thermic sensations. The left side of chest to border of ribs exhibits the same condition. In a limited part of superior left abdominal area there is complete anæsthesia. (*Vide* Chart II.) Lower extremities normal. On the back loss of painful and thermic sensations reaches on the right side to upper limit of the pelvis, and on the left side to the level of the first dorsal vertebra. Sense of taste for sweet and bitter diminished on the right side of tongue. Patient complains often of painful sensations in the shoulder muscles.

H. S. male, aet. 19, locksmith, Austria, entered the General Hospital Vienna, February 25th, 1892.

Father and two brothers died of tuberculosis, mother and two brothers are healthy. A brother is a deaf mute. No neuropathic predisposition. Patient had in his youth diphtheria, a scrofulous disease of the eye and an abscess upon the lower part of left leg. With these exceptions he was always well up to a year ago. As a result of exposure in cold, damp weather, the toes of both his feet were frozen. Since this time he has noticed that he is easily tired and has been able to do only light work. At first, weakness was noticed only in his left arm, later in both arms and hands. On the dorsal surface of the fingers of left hand vesicles appeared without cause as if after burns. These vesicles affected the joints of the second phalanges, were painless without subjective symptom and disappeared by absorption in a week. A few days later a large vesicle appeared on the palmar surface of the left middle finger, two weeks later one on the left thumb, and their duration was similar to the first. Patient perspired very freely even while resting. Over the entire left side he had the sensation of crawling insects. His appetite has always been good. Bowels, bladder and genital function normal. Patient was formerly a moderate drinker, but since his present illness has been very temperate in the use of alcoholic stimulants. No history of syphilis.

Physical Examination.—Patient is small, of very stocky build, but in good physical condition. The left side of the face is flattened, the forehead is narrow and the face quite long. The expression is dull, but there is no striking change in the intelligence and his frame of mind is bright. His speech is slow and difficult, but patient states there has been no change in recent years. His face is asymmetrical, which condition has existed, according to patient, from his earliest youth, and the left half appears flatter and smaller, less developed than the right in its osseous structure (hemiatrophia facialis sin.) The nose, which is well developed, points toward the left side. The eyes, which are somewhat prominent, show nothing abnormal. The pupils are equal, and react promptly to light and accommodation. The movements and vision of the eyes, and also sense of smell, normal. While at rest there is no evident difference in the sides of the face. In active motion the right corner of the mouth is lower than the left. When the motor effort is marked there is a slight tremor in the region of the right facial. In laughing the difference is less evident, and is scarcely perceptible in the upper and lower branches.

Sensory Examination. — Upon testing sensibility of face with a small brush, it is felt upon both sides, but less marked upon the left side. The mucous membrane of eye, mouth and nose on the right side is more sensitive than the left side. In the region of the middle branch of the fifth, on the left side, deep sticks of a pin were felt only as tactile sensations, and patient stated that a cold test tube felt warmer on that side than on the right. Hearing normal. The tonsils are



CASE III.

Shading — Area of thermic anæsthesia and analgesia.
Crosses — Area of anæsthesia.

much enlarged; motion and sensation of soft palate normal; the tongue when well protruded deviates towards the left, and at the same time fibrillary contractions occur in the left half. There is no visible atrophy of the tongue, although the left half on palpation feels somewhat flabby. No change in sensibility or in taste. The movements of the head are normal, and the shoulders are strongly elevated. Left lateral curvature of the dorsal portion of the spinal column with a slight compensatory curvature. Marked kyphosis of the dorsal portion. Hyperæsthesia to pressure of the spinal column from the fourth to the

tenth dorsal vertebra. In cervical region a similar hyperæsthesia markedly limited to the left side. In the left supra-spinatus area, also on the left shoulder and over a limited region below the clavicle fine brushing was not felt, analgesia and thermic changes were present. Analgesic zone was also found in the right and left upper arm. (*Vide* Chart III.) The sensibility of the hand was normal. The stereognosis was good. No atrophy or loss of tone in the rump muscles or those of the upper extremity. The strength of the muscles of the upper arms is not diminished, though the thenar and anti-thenar eminences of the right hand, relatively to the other muscles of the same arm and the same muscles of the opposite arm, are slightly atrophied and feel flabby. There is also an undoubted weakness in the grip of both hands. Patient is able to shut both hands, but without strength. The separation of the fingers and the closure of the separated fingers require great effort. Nothing abnormal in the skin of the extremities, except that the hand, and especially the fingers, show scars as after burns. Patient stated that these occurred spontaneously, which is probably true, as there is no change in thermic sensation. No other trophic changes seen on the hand ; the osseous structure is apparently normal and no scars of felons. When the fingers are out-stretched there is an evident tremor. Tendon and bone reflexes are absent in the upper extremities. The mobility, the development and the sensibility of lower extremities and of abdominal muscles normal. The muscles are unusually well developed. Markedly flat-footed. Cremasteric reflex normal, patella reflex increased, though ankle-clonus could not be produced. Muscular tone probably somewhat increased, but no marked rigor. Lungs, heart, abdominal organs, vegetative and urinary organs normal. Electrical reaction diminished on the left side, but no reaction of degeneration.

In the histories of these three cases the characteristic symptoms are :

Sensory disorders.—Subject and objective, as shown by the patient's complaint of loss of feeling and paræsthesia, while examination reveals loss of painful and thermic sensations with retention of tactile sensations (disassociated anæsthesia).

Motor disorders.—Loss of strength, atrophy of muscles, curvature of the spine.

Trophic and vaso-motor disorders.—Callosities, cracking of the skin and nails, vesicles, pustules, ulcerations, arthropathies, œdema, hemi-hyperhydrosis and hemi-anhydrosis.

Disorders of reflexes.—Increase of superficial and deep reflexes of lower extremities and absence of those of upper extremities.

The symptoms, of course, vary with the location and extent of the lesion ; in some the motor symptoms may predominate, in other cases the trophic, while the location of the lesion in any special part of the cord may give rise to symptoms simulating almost any systemic

disease of the cord. Cases of syringo-myelia were, up to recently, diagnosticated as other affections, simply because they presented some of the symptoms of those diseases and were not sufficiently thoroughly examined. The prominence of the atrophy caused it to be most often mistaken for progressive spinal atrophy, but the sensory and trophic changes, with the involvement of the sympathetic, the increased reflexes and spinal curvature render the differential diagnosis a simple matter.

A chronic progressive muscular atrophy of the upper extremities, with spastic or ataxic gait, is not a simple spinal atrophy, but is probably an atypical form of syringo-myelia.

Pachymeningitis cervicalis hypertrophica and *compressio cervicalis* are readily differentiated by irritative symptoms—shooting pains, stiffness of neck, carefulness in bowing, sensitiveness on direct pressure and upon tapping. Then all forms of sensibility are impaired; but less extensively than the muscular atrophy; secondary degenerative changes more marked, spastic paraplegia; course more rapid. There are, however, some atypical forms in which the irritative symptoms are less prominent and partial sensory changes render the diagnosis difficult.

Amyotrophic Lateral Sclerosis has progressive muscular atrophy, spastic paresis, increased reflexes, but no sensory or vaso-motor disturbances. The muscular atrophy is usually bilateral and symmetrical, with greater tendency to spread. The course is more rapid, the duration being from three to five years. Some cases, however, have pains and sensory disturbances which are usually limited to special parts of an extremity, and not spread over a considerable portion of the surface of the body. General trophic changes involving the skin, bones and joints, and especially unilateral bulbar symptoms exclude this affection.

Multiple Sclerosis in atypical forms may closely resemble syringo-myelia. But the muscular atrophy which is rarely marked in multiple sclerosis, the sensory changes which though at times present, are not disassociated, the absence of trophic changes in the skin and bones and of spinal curvature, will clear up doubtful cases.

In *Anæsthetic Leprosy* the anæsthesia occurs in patches abruptly defined and irregular in distribution, and involves also tactile sensibility; the nerves are enlarged and the inguinal glands swollen. The dermic changes more pronounced — bullæ, ulcerations, pigmentations and especially the characteristic white scars which are anæsthetic.

Examination of the secretion from the ulcerated surfaces would show the presence of the bacillus of leprosy, the habitat. Spastic symptoms exclude leprosy and indicate syringo-myelia.

Peripheral Neuritis shows a more rapid development, but limited to special nerve areas. Nerves involved hyperæsthetic; sensory changes, if present, affect all forms of sensation ; condition remains unchanged or diminished in intensity; ætiology.

Locomotor Ataxia in typical cases is easily differentiated, but some cases present considerable difficulty. The fact that tabes may have sensory disorders and marked muscular atrophy in the upper and lower extremities, due to neuritis, and that syringo-myelia may have the lightning pains, girdle feeling, crises, and even the ocular paralysis, absence of knee jerk, ataxia and Romberg's symptom, show how difficult the diagnosis may be, and especially in cases of tabes cervicalis or syringo-myelia involving the dorsal portion of the cord.

Hysteria, whose protean character simulates almost every nervous disease, may assume the form of syringo-myelia. The sensory disorders show at times the typical characteristic of disassociation, trophic changes in the skin are common, and also injuries due to self-mutilation. Of great differential importance are the emotional disturbances, the mutability of symptoms, the influence of suggestion, the age, sex and surroundings of the patient, the beginning and course of the disease. Hysteria complicating spinal muscular atrophy or tabes often renders the diagnosis difficult.

Morvan's Disease, described by the French physician Morvan in 1883, consists of an atrophy involving the muscles of the hand and forearm, marked sensory changes as analgesia, thermo-anæsthesia and tactile anæsthesia and painless trophic disturbances as ulcerations, callosities, cracks, and arthropathies. Although Morvan claims the clinical existence of this special disease, it is very probable that these symptoms in some cases indicate syringo-myelia, in others anæsthetic leprosy, and that it is not a distinct disease type.

Although the diagnosis and study of a rare and uncommon disease has little practical value in routine work, the investigation of the lesion in cases of syringo-myelia has done much to shed light on the physiology of the spinal cord, and especially upon sensory conduction. The experiments of Brown-Sequard proved that most of the sensory fibres decussate soon after they enter the cord and continue their course to the brain on the opposite side. The study of syringo-myelia has shown that sensory conduction is a complicated affair,

and that the different forms of sensory impression are conducted by different paths, so that tactile sensibility may be present while painful and thermic sensations are not perceived. The experiments of Schiff, Woroschiloff and Sherrington,[1] and the clinical cases of Gowers[2] and Müller[3] indicate that the posterior and antero-lateral columns contain the sensory paths, the posterior columns conducting tactile and muscular sensations, while the antero-lateral columns conduct painful and thermic sensations and those acting upon the vaso-motor centres. The fibres for tactile and muscular sensation decussate in the posterior commissure, while the other sensory fibres probably decussate in the anterior commissure. The loss of thermic and painful conduction, together with vaso-motor disturbances, would, therefore, indicate that the path of the fibres conducting these sensations was in close proximity to the central canal, the usual seat of lesion in syringo-myelia.

24 SOUTH HAWK STREET.

THE SERUM TREATMENT OF MALIGNANT GROWTHS,

WITH A REPORT OF THREE CASES.*

BY W. H. HAPPEL, M. D.

It was a fact well known for some time that certain malignant neoplasms were retarded, decreased in size, and even made to disappear by an attack of erysipelas, before any attempt was made to utilize this rather striking fact in therapeutics.

With the birth of sero-therapy, however, serum, tried in almost every disease of to-day, was also applied to tumors. True, attempts had been made previously to influence these growths by the inoculation with the streptococcus erysipelatus, but with rather unfavorable results. They were soon abandoned, although Coley has collected a series of 38 cases cured of malignant growths by erysipelas, "either by accident or intent."

Finally, several years ago, Coley began the injections of sterilized erysipelas toxin at first, and later of the combined toxins of erysipelas and bacillus prodigiosus, the so-called mixed serum, a much stronger preparation, in the treatment of inoperable malignant growths.

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1. Gower's Diseases of the Nervous System.
2. Clin. Sc. Transactions, vol. XI, 1878.
3. Beitrage zur Pathol. Anat. und Physiol. d. Rückenmark, 1871.

* Read before the Albany County Medical Society, November 11, 1896.

This mixed serum was nothing more than a serum culture prepared in the following manner. Sterilized bouillon was inoculated with the streptococcus erysipelatus which was allowed to grow about three weeks at a temperature of 30–35° C. It was then inoculated with bacillus prodigiosus. This was allowed to grow about two weeks at the ordinary temperature of a room. The bouillon was then poured into small sterilized bottles and again sterilized by being heated to a temperature of 60° C. for one hour. This was found to yield a stronger preparation than when filtration was employed. His results were striking. Carcinoma was retarded but not cured. Out of twenty-five cases of sarcoma treated up to May, 1894, sixty-seven were cured apparently without recurrence for from six months to two years. Since then out of thirteen cases of sarcoma three are apparently cured. In a later comprehensive report, forty-three cases of sarcoma were reported with eleven cures, and twenty-seven of carcinoma, with two cures.

Abroad Emmerich and Scholl have investigated the question and have reported cases ostensibly cured by erysipelas serum. But both here and abroad a great deal of adverse criticism has been uttered on the method and its results, especially with regard to some of the severe reactions. This feature Coley has sought to overcome by employing the serum of animals rendered tolerant toward the toxins instead of using the toxins themselves.

In passing I might say that this seems on the face of it to be an unphilosophical procedure, bound to defeat its own ends, and such, indeed, it is, yielding as it does simply anti-streptococcus serum, not so much different from that of Marmorek. The probable reason for the success of this preparation will be touched upon later. It has been urged that in a number of cases where cures have been claimed the diagnosis has not been verified by clinical or microscopical examinations, and with regard to Emmerich and Scholl, that their statistics were not exact, as they had omitted failures and bad results.

Ominous are the results of Kopfstein, who treated thirteen cases of carcinoma, one of sarcoma and one of malignant lymphoma. There was no amelioration except in ulcerated growths, but, even here where there were apparently healthy granulations, they were found to contain typical cancer nests, nor were metastatic growths affected.

While Emmerich and Scholl and Coley use preparations that are practically identical, Richet and Hericourt have used a serum

obtained from animals injected with expressed cancer juice. By what process of logical reasoning the efficacy of this preparation could be inferred it is difficult to see, unless the microbic origin of malignant growth is admitted. Nevertheless they report some extraordinary successes.

But while the successes have been fairly numerous the reverses have been much more so.

Delbet has sought to explain this by suggesting that under the head of sarcoma many different pathological conditions may be grouped, which, if true, will no doubt explain the widely discrepant results obtained to-day. But there is another explanation that lies much nearer and is more rational. It has been concisely stated by Opitz: "Every remedy that unites relative non-toxicity for the system and the absence of unpleasant collateral phenomena with sufficient anti-parasitic (i. e., antiseptic) and irritating properties, is adapted for use." Hence, alcohol, pyoktannin, methyl blue and other preparations have been used with good results. Hence, also, the good results of such widely different fluids as Coley's and Richet and Hericourt's, that had, however, two points in common—sterility and slight antiseptic powers.

I append a report of three cases. The results are not calculated to inspire a "robust faith," to use Senn's expression, whatever may be allowed for paucity of numbers and faulty technique.

I wish to express my indebtedness to Dr. C. E. Davis, of this city, who kindly furnished me with the serum.

Mrs. N., aet. 45–50, presented herself June 13, 1895, with an indurated growth in left naso-labial fold, with the following history:

For several years this growth was apparently a wart about as large as a split pea and caused no discomfort by its presence. But during the last three months it had suddenly begun to itch and burn. Violent stinging pains darted through it and it began to increase until now it is as large as a hazelnut, looks angry and inflamed. Its upper surface is soft as if about to break down, and the base is hard and indurated. These symptoms left no doubt in my mind as to the growth being an epithelioma, and treatment with serum was begun immediately. Injections were placed in arm. The first consisted of two minims, followed by a temperature of 99° on the 14th. The temperature may have been higher on the previous day, as the patient felt tired and hot and was quite thirsty during the night. The second injection consisted of three minims. No temperature could be taken that day. Patient, however, states that she felt "very feverish and sick all over." The growth had ceased giving her discomfort, no longer itching, burning or paining. It had also become somewhat flatter. Point of injection began to swell and grow red and almost

ham colored. (Pseudo-erysipelas.) This condition spread by following day over the whole forearm. On the following day four minims were injected in the other arm, and the next day five minims in same arm. This arm now presented the same appearance on the morrow as the other, and injections were discontinued from June 19th to June 24th, because of patient's discomfort, and a hot pack was applied to each arm. By June 25th the growth presented its original symptoms. Injections were again begun at five minims, and continued on alternate days for a week without any results. Febrile reaction was slight and patient was unwilling to continue. Growth was removed on July 1st. Base extended well down into cheek, and was characteristically carcinomatous. Patient died recently of some cerebral trouble.

Mrs. A. E., aet. 29, was operated on about five years ago for sarcoma of pelvis. It was impossible at that time to wholly remove the mass. Since that time the growth has several times protruded from incision and parts have been removed. At present the growth again protrudes and is considerably larger than a hen's egg. Patient is anæmic, more so than cachectic. She suffers a good deal of pain; uses considerable morphine, and, of course, eats very little. She has considerable œdema of ankles. Urine reveals nothing. Growth discharges a considerable amount of watery fluid, so much so that patient wears a thick bandage, which she is compelled to change several times a day. Odor is intensely offensive. First injection of two minims was administered on April 5th. Circumstances prevented a temperature being taken on that day, so that the reaction is uncertain. On the 6th the second injection was given, consisting of three minims. There was no febrile reaction, but there was an increase of discharge. On 7th, four and half minims; temperature, 100°.8. On 8th, five minims; T., 99°.2. Some pieces came away on this day. On 9th, six minims; T., 100°.2.

The growth now seemed to be decreasing. This perhaps was only apparent and may have been caused by the inflamed edges of the wound concealing some of the growth, as many injections were put along the edges of the wound.

The patient had been practically free from pain since the third injection and used no more morphine. She took an iron and arsenic tonic, ate and slept well. From April 12th until 17th inclusive, the patient received ten minims daily, the temperature never rising above 100°.8 at any time. On the 18th and 19th she received eleven minims without any more rise of temperature. On the 20th the injection was omitted. On the 21st she was given twelve minims, also without any reactionary temperature.

There was no further change in growth and discharge. In view of this fact injections were given about three times a week, varying from twelve to fifteen minims. But pain began to manifest itself again, and did not seem to be controlled any longer by the serum. The patient was finally compelled to remove a considerable distance from my office. She has since presented herself at longer intervals and seems to be in about the same condition. She is again suffering pain and insomnia, and not obtaining the slightest relief from treatment. Appetite has again failed, and œdema has increased. During the last three months she has passed from observation.

Mrs. S. aet. 48, on December 1, 1895, presented herself, with a considerable enlargement over adductor region of left thigh. She is the mother of two children; no previous illness of any kind nor history of malignant growth in family. This enlargement had, according to her statement, come on rapidly, and had been noticed but about six or eight weeks by her. When she sought treatment it had attained the size of two fists and interfered seriously with locomotion. Examination proved it to be a sarcoma — the diagnosis being made from the adherence of cuticle — rapid increase of growth, loss of flesh and appetite, and the pain suffered by patient. Patient was warned concerning danger of the affection, but for the present was averse to any operation and insisted on some medical treatment. She was therefore put on large doses of arsenic in the form of the arsenite of potash and iron, being treated locally, also, with inunctions of Hydrarg. oleat. c. morph. 20 per cent. This concession to the patient's idea of treatment was carried out for about two weeks with the usual results, that matters grew steadily worse. Finally, at the end of that time the patient consented to operation, which, however, had to be postponed for two weeks for peremptory reasons, so that operation was not performed until the 7th of January, 1895. During this time the growth had increased alarmingly, while the strength of the patient had decreased in proportion. It was found that the growth was in the sartorius, which was almost entirely removed; no inguinal glands were involved. Patient did not react very well. On the day following operation the temperature went up to 104°, preceded by a chill. It, however, readily fell under exhibition of quinine. The wound did fairly well and the patient got up about fourteen days after operation. Special care had been taken to remove every suspicious particle. A good inch of sound muscle had been removed at the lower end of the sartorius, while at the upper end, where the growth showed some signs of breaking down, muscle had been removed as closely as possible to its origin. The bottom of wound, in which the femoral could be seen pulsating, had been carefully searched for any enlarged glands without success. Yet at the end of three months the patient presented herself with a recurrence of growth almost as large as the original and beginning at lower extremity of the cavity occupied by the first growth. There were now some enlarged inguinal glands. The skin over the growth was tense, red and mottled, very much as that over mature abscess; the mass itself was so soft as almost to impart a feeling of fluctuation. Patient now looked cachectic, had lost appetite and was weak. Operation being inadvisable from glandular infection, rapidity of growth of neoplasm and patient's condition, it was decided to use the injection of mixed serum of streptococcus erysipelatus et bacillus prodigiosus. Before beginning treatment a free incision was made. The first injection, consisting of two minims, was made March 31st, and continued daily in increasing doses until April 7th, when nine minims were given. The febrile reactions were: 99°, 100°.2 and 99°, respectively, after the first three injections, but I did not see the patient after the third injection until late at night. In afternoon the patient had felt very hot and thirsty, and had a very profuse perspiration, so that the temperature no doubt was falling when it was taken. The wound discharged about four ounces of fluid.

Inj. 4–5 minims—Morning T. 99°, E. T. 100°.8, pulse 102, fairly good.
" 5–6 minims " " 98°.4, " " 100°.
" 6–7 minims " " 99°.8, " " 100°.2.

An ulceration of skin near incision was united with the wound by an incision. Several ounces of fluid escaped and continued to do so during day. The seventh injection, eight minims—M. T. normal ; E. T. 100°.8. There was a great deal of pain. The patient, before injections were begun, complained bitterly of pain, which, however, disappeared on the first injection, and did not recur until a week had elapsed.

Eighth injection, nine minims, M. T. 100°. Pain ceased ; there was a great deal of discharge. E. T. 103°.6. On April 8th—9th injection, of ten minims, was given with this result: M. T., 100°.5; E. T., 104°. On the following two days the temperature was 102°, 103°, respectively, in morning ; no injections were given.

On the third day an injection of five minims was given, the M. T. then being 101°, rising after injection to 103°. A great deal of ichorous fluid now escaped. There was some sloughing and the growth was plainly decreasing in size, the center sloughing, but the growth increasing peripherally. From now out injections were increased one minim daily, and continued until April 15th when ten minims were given, the reactionary temperature varying from 102°–103°. During this time large masses of broken down growth were removed until it had been diminished over one-half. On April 16th, 17th and 18th no injections were used, as temperature remained at 105°. On 20th, as discharge seemed to be ceasing, six minims were injected, followed by a temperature of 103°; on the 21st seven minims, followed by a temperature of 105°. (We had then used all the serum on hand, another vial having been ordered, but not having yet arrived. For good reasons injections were discontinued for about ten days. It is here that we lost, I regret to say it, control of our case.) Thus far patient had not decreased perceptibly in weight. Appetite had remained good and patient hopeful, as the growth had now decreased considerably over one-half and the glands in groin were now hardly larger than peas, where they had been as large as hazelnuts.

From April 21st until May 4th we were without serum, and in this time growth again increased to its original size while patient lost flesh, appetite and resistance.

On May 4th injections were begun at six minims (T. 104°) and increased daily. Strange to say, as we now in the patient's weakened condition raised the amount given, the temperature fell successively to 103°–102°–101°.6–100°.6–100,° until finally when on May 14 ten minims were given, it remained normal and never again rose, even when ten minims were exhibited, over 100°.2. The pulse now began to fail also, running upon the 15th to 132 ; on the 16th to 144.

On the 17th it was almost imperceptible. During these two weeks, however, the discharge from the growth had continued, again large pieces of sloughing tissue began to come away, and the growth was rapidly decreasing in size. From May 18th, ten minims were used at intervals of two days with rectal injections of whiskey and nutrient enemata, as the patient rejected all food.

There was now no longer the slightest febrile reaction from injection, and while growth was melting away still patient was plainly becoming moribund. On the 27th day of May coma developed, followed by death on the following day. Inspection and examination of leg now showed that growth had almost entirely disappeared.

In conclusion, I would point out the fact that my experience with regard to the last case does not stand alone, but has been noted by others, namely the central sloughing and peripheral increase, which shows rather conclusively that the action of the serum is local, and due in great part to a limiting peripheral inflammation set up by its use. It does not, therefore, correct any dyscrasia. For this reason large tumors will never give very good results, as it will be impossible to place enough injections about the periphery of the growth in most cases at intervals of time sufficiently short to destroy the growth before the latter destroys the patient. This latter was the end of the last case. In fact, the practical disappearance of the growth and the simultaneous death of the patient, have been observed sufficiently often to teach us that the cancerous dyscrasia may kill a patient under serum treatment even while the tumor is palpably diminishing, and that, consequently, the serum treatment should be strictly confined to absolutely inoperable cases, and should not be employed while the knife can still be used.

351 SOUTH PEARL STREET.

For the ANNALS.

A NEW POWDER FOR ACUTE CORYZA.

BY CLEMENT F. THEISEN, M. D.

Instructor in Diseases of the Throat and Nose, Albany Medical College.

There is, perhaps, no disease for which, from time to time, more new methods of treatment have been recommended, only to be thrown aside after a short trial, than acute coryza. So that to bring forward still another new remedy — or rather a new combination of agents that have been already used — seems like adding a method of treatment to a list already superabundant. This powder, however, has been used by me for every case of acute rhinitis treated during the past six months, with the result, if used early enough, of cutting short the acute symptoms (that is, checking the profuse discharge), more quickly than anything I have so far used.

The formula for this powder is as follows:

℞ Sodii Bicarb.
Sodii Biborat. āā gr. xv.
Amyli gr. v.
Acaciae ʒ j.
Nosophen q. s. ad ℥ j. M.

I usually employ the following method for its administration:

The patient is given a mild alkaline wash (such as Seiler's), which is to be used lukewarm. The nose is sprayed with this so as to cleanse it as much as possible from mucus, and then about three grains of the powder is snuffed up each nostril.

While the secretion is very profuse, this is repeated two or three times daily, and after the acute symptoms have subsided, once a day. When possible it is always better for the physician to treat the nose, himself for the first few days.

There is, of course, nothing new about the use of nosophen (a new iodine powder) alone. It has been recommended, particularly in Germany, in the treatment of acute rhinitis. Th. Koll (*Berliner Klin. Wochenschrift*, 1895, No. 29), states: "In the different forms of acute and chronic rhinitis with hypersecretion, the mucous as well as the purulent discharge was much diminished by daily insufflations (once or more) of nosophen frequently, more quickly than by any other agent which has been used."

Dr. Seifert of Würzburg (*Wiener Klinische Wochenschrift*, 1895, No. 12), has also used nosophen in many cases of rhinitis hypersecretoria et acuta, and noticed how much, and how quickly nosophen diminished the secretion, frequently in one day. In acute rhinitis, when the nosophen was insufflated two or three times daily, often on the second day the discharge was much diminished and the swelling of the mucous membrane subsided. I have found that the formula given above has a better result than nosophen used alone (which I have also tried in a number of cases). The effect of bicarbonate of sodium, too, on the nasal mucous membrane is to check secretion. Internally, in large doses as recommended by L. Duncan Bulkley, it does a great deal of good in the acute stage of a cold.

Certainly the above powder has not been used in cases enough to draw any positive deductions. Nevertheless, while not a specific (and *no drug* thus far used is that), no treatment that I have ever used has given me so much satisfaction. The powder is not irri-

tating, and is comparatively odorless. Its drying qualities are quite remarkable. In some cases where I have been able to follow the treatment closely, by having patients come to the office daily during the acute stage, I have often noticed that for over a half hour after the powder was insufflated the nose was quite dry, and some of the powder could be seen adhering to the mucous membrane This property of the powder, with its well known bactericidal power, makes it, I believe, a useful addition to our treatment of acute coryza. It is intended for nothing more than to check the acute symptoms, and is not meant to take the place of the time-honored methods (hot drinks, Dover's powder, quinine, the various coryza tablets, etc.), of treating a "cold in the head," but can be used to good advantage with them.

Every case must be studied, and the underlying, predisposing causes (hypertrophies of the turbinated bodies, deviated septa, exostoses enchondromata, polypi, etc., one of which conditions is usually present, and makes poor suffering humanity take "cold" so readily), removed.

172 WASHINGTON AVENUE.

Clinical and Pathological Notes.

A Case of Hypertrophic Cirrhosis, with Vagabond's Pigmentation.

FROM THE MEDICAL SERVICE OF ST. PETER'S HOSPITAL, WITH ABSTRACT OF POST-MORTEM FINDINGS FROM RECORDS OF BENDER LABORATORY.

W. W., male, aet. 33, single and native of the United States, was admitted into St. Peter's Hospital September 9, 1896. He complained of loss of weight, strength and appetite, vomiting, severe diarrhœa, painful cough, with a tough, semi-solid, foul-smelling expectoration and dyspnœa marked upon exertion. His family history is negative. Patient has had gonorrhea once and contracted syphilis about eight years ago. Has always drank heavily, and for three weeks previous to entrance into hospital lived on whiskey. Has for last ten years either tramped about the country or traveled with a circus, taking absolutely no care of himself. Temperature ranges from 100° to 103° and pulse is weak, of low tension, rapid but regular.

Skin is a bright, yellow hue, with dark brownish pigmentation, especially distinct about arm pits, inguinal region, inner side of legs

and lateral aspects of trunk. No pigment in mucous membrane of mouth or conjunctivæ.

Chest.—Depressions above and below clavicles, respiratory movement greatly diminished, especially upon the left side and respirations increased to thirty-two per minute.

Vocal fremitus increased over left apex and dullness over both apices, with impaired resonance over the entire left lung; less marked over right. Bronchial respiration, with moist rales during inspiration heard over both apices. Heart negative, except accentuation of second pulmonic sound.

Spleen enlarged and liver palpable two inches below the border of ribs, feels smooth and resistant, but is not painful to touch.

Urine negative, except that it was highly colored and gave a positive reaction for presence of bile. Sputum contained much elastic tissue, but no bacilli were found. There was present a marked leucocytosis.

Patient gradually grew weaker and died three weeks after admission.

The diagnosis of his pulmonary condition and hepatic cirrhosis was plain. Doubt, however, arose as to the cause of the dark brownish pigment upon inner sides of legs, arms and sides of trunk. The possibility of Addison's disease was considered, and especially as both Strümpell and Eichhorst say that other tubercular affections, and especially pulmonary tuberculosis, are almost always present. Osler, however, makes no mention of this association of lesions.

The history that this pigmentation had been present for many years, without other symptoms; that he had been most uncleanly in his habits, not having taken a bath in three years, a fact confirmed by the vermin with which he was infested, together with the absence of pigment from mucous membrane, rendered the diagnosis of Vagabond's pigmentation highly probable. The possibility that the two conditions could be brought under one head — the *cirrhose pigmentaire* of the French — was easily excluded by the absence of diabetic urine.

Autopsy Record. Body of a medium-sized man, a good deal emaciated. General bright, golden yellow icterus of the surface. Brownish pigmentation of the skin over the sides of the trunk and the inner sides of the legs and thighs. Subcutaneous fat moderate in amount.

Peritoneum.—Normal. No excess of fluid.

Pericardium.—Free from excess of fluid. Soldier's spot over right ventricle.

Heart.—Normal, except for bile staining of the endocardium.

Lungs.—The whole left lung and the middle and lower lobes of the right lung infiltrated with tubercle nodules, mostly showing central caseation and having a peribronchial distribution.

Spleen.—Much enlarged. Extremely soft, almost diffluent. On section a chocolate red color, with a great increase in pulp.

Liver.—Is a little enlarged. The consistency is increased. The surface rather irregular and a mottled, yellowish-green color. On section the same mottling is apparent, the surface is irregular. There is apparently some new connective tissue in the form of fine bands between the lobules. The bile is thin and almost colorless. The common bile duct is patent.

The kidney shows no lesions, except icterus.

Adrenals, *pancreas* and *testicles* are normal.

The *stomach* shows thickened walls with prominent surface covered with a sticky mucus.

Microscopical Examination. *Lung.*—There are apparently no normal areas of lung substance. The section may be divided into completely consolidated and partly consolidated areas. In the partly consolidated areas the alveoli contain a small amount of exudate consisting of a granular material in which is seen large epithelioid cells, a few polynuclear leucocytes and an occasional dust cell and red blood corpuscle. There are other areas where the alveoli are completely filled up with a loose exudate consisting mostly of red blood cells and polynuclears, and still others which present the typical appearance of the so-called gelatinous pneumonia of Laennec. The alveolar walls in most of these areas are but slightly thickened, but areas are present in the section in which there is a distinct interstitial pneumonia with fibrous thickening of the walls, and in places organization of the exudate. Scattered through the lung substance are large caseous areas densely packed with nuclear detritus and polynuclear leucocytes. These are presumably tuberculous in nature, for though no distinct tubercles can be made out, the tissues about them contain many epithelioid and small round cells. No giant cells are to be seen. The blood vessels of the lung show no particular change, perhaps slight thickening of the intima in places. The amount of coal pigment present is small.

Liver. — There is a marked increase in the connective tissue of

the organ. Its distribution varies considerably. In some places the increase is confined to the portal regions, and all through the organ it is greatest in these regions. Over large areas, however, the increase is in the form of fine bands running between individual cells and groups of cells, throughout the lobules. The connective tissue is quite cellular, and associated with it are not only small rounds cells and the various stages of connective tissue cells, but in places numbers of polynuclear leucocytes. It seems quite probable, though this cannot always be made out, that these latter are generally in the blood vessels. The capsule of the liver is but slightly thickened. The appearance of the liver cells varies in different parts of the section; it is very evident that they are least changed in those lobules in which there is but little new-formed connective tissue. In the lobules where there is much connective tissue, on the other hand, the cells have undergone extensive changes. Many of them have lost their nuclei and are changed into a granular refractive substance staining sharply with the eosin and evidently hyaline in nature. The commonest change, however, is a fatty one, the fat occurring in large droplets and in many instances merely pushing the nucleus aside. In many instances the hyaline and fatty changes occur in the same cell. In the least affected areas the cells merely appear swollen and more granular than normal. The bile ducts, where they are seen, are normal in appearance and present no evidence of inflammation. In the new-formed connective tissue are numbers of the so-called "new formed bile ducts;" some of them distinctly give the impression of originating from compressed liver cells. The blood vessels of the organ contain a larger number of leucocytes than normal, the excess being in polynuclears. In places, generally near the periphery of the lobules there are areas of liver cells filled with a finely granular brown-yellow pigment.

Kidney. — Beyond swelling of the cells of the convoluted and Henle's tubules and slight increase in connective tissue appears normal.

Spleen.—Shows a great increase in blood. Many of the red corpuscles can be seen to occur in groups inside of large spleen cells.

Anatomical Diagnosis. Hypertrophic cirrhosis of the liver; tuberculosis of the lungs; acute spleen tumor; cloudy swelling of the kidney; icterus.

Rupture of the Spleen, Internal Hemorrhage, Abdominal Section, Splenectomy —Death Twelve Hours Later from Intermediate Hemorrhage.

A CASE FROM THE SURGICAL CLINIC OF THE ALBANY HOSPITAL.

Adam K., aged twenty, single, a boatman by occupation, was injured November 21st, 1896. At the time of injury he was in vigorous health. The particulars of the accident were difficult to learn, since the patient was brought to the hospital in the ambulance, and was unaccompanied by friends. However, we were able to learn that he had fallen, or been thrown, a few feet, either against a boat rail or pile near the boat landing twenty miles down the river. Had vomited, felt faint and been placed on a tug and brought to Albany, where he was received by the ambulance and brought to the hospital, arriving at noon.

He was immediately taken to the surgical clinic, and the following conditions observed: Patient lay quietly on stretcher, with no complaint of pain, but of cold and thirst; questions were answered with hesitation, expression anxious, skin pale, covered with cold perspiration, temperature (rectal) 95°.2 F., pulse at wrist apparently 72, at heart 140, and very feeble.

A hurried physical examination was made. No external signs of injury were observed; tension of the abdominal muscles on the left side was much exaggerated; tenderness over this region was exquisite. An abnormal area of dullness to the left of the umbilicus could be distinctly mapped. The catheter was introduced and normal urine drawn, showing the kidney and bladder uninjured.

The immediate treatment, which had been already partially instituted, consisted in the hypodermic injection of strychnia gr. $\frac{1}{15}$, an enema of whiskey and saline solution, and the intermediate transfusion of one quart of normal salt solution in the axillary spaces, besides the application of external warmth — blankets and hot water bottles. He was placed in bed, and by 5 P. M. had reacted somewhat; temperature 97°.6 F., pulse 110, and of fair quality.

The area of dullness had increased, and from the clinical history and symptoms a diagnosis of internal hemorrhage, progressive in character, was made. An immediate abdominal section was undertaken, with the consent of the patient.

An incision five inches in length, the centre at the umbilicus, was made. When the peritoneum was reached the black reflex of effused blood was seen. With the completed incision a large quantity of

fluid and clotted blood was removed from the abdomen—five pints were saved and measured.

The source of hemorrhage was found with difficulty through an extended incision. The splenic vein close to the spleen had been lacerated together with that organ. The wound in the spleen was two and one-fourth inches in length. Under the circumstances, the spleen was removed at once; and the pedicle ligated *en masse* with strong silk. Apparently at this time all hemorrhage had ceased; the abdomen was flushed with hot normal salt solution and closed with drainage.

During the operation the patient had received a second transfusion. He was on the table one hour and twenty minutes, and left it in good condition. Temperature at 10 P. M. 100°.2 F., pulse 102; drainage practically serous; no blood. At 2 A. M. a violent attack of vomiting occurred, which was followed by an abundant hemorrhage from the drainage tube. The patient rapidly sank, and died at 4 A. M.

AUTOPSY.—A secondary hemorrhage had occurred into the abdomen from large veins lying in the neighborhood of the left adrenal gland. The ligature was firmly imbedded, and had held the vessels completely. There were no fractures or other injury.

The intermediate hemorrhage came from vessels sealed by clots at time of operation. With the following reaction and vomiting these clots were forced out and the bleeding renewed. However unfortunate the outcome in this case, we believe that abdominal injuries such as have been detailed should be treated by prompt surgical intervention; at least an exploration at the earliest possible moment after the injury. This patient died; the next one will not have the complications, and will get well.

The most difficult question, "What are the indications for operation?" has been discussed at length elsewhere (MACDONALD: *Contusions of the Abdomen. The American Journal of Obstetrics, Vol. XXXIV, No. V. 1896*), with the following conclusions:

"Fully appreciating the conditions of the problem, I approach the determination of a symptom-complex associated with abdominal contusions which demands an immediate celiotomy. This symptom-complex depends for its integral factors upon the following points: First, history of the injury; second, the symptoms, pain, shock, vomiting, constipation and pulse; third, abdominal tension, tenderness, dullness and distension. Not all of the symptoms which have been already considered are to be observed in every case, but suffi-

cient will be present to warrant, upon careful analysis, an exploratory abdominal section. Explorations undertaken during the first twelve hours following injury have yielded very flattering results. Operations undertaken after the onset of septic peritonitis have given very little encouragement to surgery. The cases in which no lesions were found at early operations have been very few, and never followed by death. It will bear repetition that before unmistakable diagnosis of intestinal rupture is established in contusions of the abdomen, irreparable damage through septic infection has too often occurred. Operation before peritonitis is the art of success."

W. G. MACDONALD.

Editorials.

The Medical Annals.

With this number the ANNALS appears in a new form and under new management. Dr. Van Rensselaer, after successfully conducting this journal for five years, has resigned, and the present editors have been chosen to continue this work. Although the first of the year is the appropriate season for promises and resolutions, our motto for the present at least shall be "*acta non verba*," even though thereby apparently guilty of a paradox. Our hope, however, is to make this journal an exponent of the best medical thought, and our effort shall be to keep it up to the highest possible scientific plane.

The Bender Hygienic Laboratory.

In our last issue was an account of the Bender Hygienic Laboratory in so far as its origin and general scope of work was concerned. It may be well to again call attention to that work with more particularity.

The three main objects of the Laboratory are original investigation, the teaching of students, and the study of the excreta from various pathological conditions.

The two first objects have no direct interest to the general practitioner, but the last has, inasmuch as it is to the laboratory he will turn for aid in such cases as demand a careful microscopical examination.

Such examinations will include the investigation of urine, sputum, blood and material from cases of suspected diphtheria; also the examination of tumors, uterine scrapings and similar substances. For such examinations a fixed charge will be made, with certain

exceptions, which are noted in the Laboratory Circular recently sent to the alumni.

It is hoped that the alumni will aid to the fullest extent in supporting the Laboratory, not only by sending paying specimens, but also by contributing interesting pathological material in such a form that it can be studied with advantage.

The Adirondacks as a Feasible Source of Water Supply.

In a recent number of the *Engineering Record* is an article upon the water supply problem of the Greater New York. Sooner or later Long Island will fail to availably furnish water for the needs of Brooklyn. Investigations have already been made of other and more remote sources.

The question of furnishing more or better water to not a few of our growing cities is a pressing one, and it is worthy of the careful consideration that a very important problem of health demands. It ought to be studied with deliberation and in a large way that will take in the interests of more than a single community. Massachusetts has secured a most valuable work from a well-equipped engineering department of the State Board of Health, which during the past ten years has at experimental stations learned a great deal about the purification of water, and which has also planned an efficient supply for the Metropolitan district of Boston and vicinity. In a recent annual report that board says: "It is difficult to estimate the extent of the useful results accomplished during the ten years since this act became a law of the Commonwealth." Such an addition could very well be made to the State Board of Health of New York, where, as primarily a health matter, and so being in the direct line of its work, a similar department could with most propriety be established. The board did excellent work in 1886 on the Croton water shed. At any rate, the investigation of this matter of cities water supply is worthy of State consideration. A large State like New York ought to carry on investigations not only practical for the moment or place, but experimental and contributory to general scientific knowledge.

The *Engineering Record* states that surveys made in the upper Hudson valley indicate that, if properly stored, a sufficient supply of water for all the cities along the lower Hudson may be obtained by gravity from the southern and eastern slopes of the Adirondacks. If there is the possibility of this, it is worth a large outlay to make cer-

tain of it. We are studying how to make impure water fit to drink, and if we are shut up to the use of impure water, that is the best and only thing to do. But how much better to go to an undefiled source! What a possession New York has in its Adirondack region, and how immensely its health-giving resources are made available if they can be sent away direct to the people, if its uncontaminated springs can be poured in the homes of our large cities. No question can interest Albany more than this, and it is to be devoutly hoped that it may be speedily investigated and satisfactorily answered.

If it should not be possible to secure a gravity supply from this source, it is not improbable that Lake Ontario could be made available, but in its case pumping would be necessary to raise its water over the ridge between it and the Mohawk valley, about 200 feet high. This deep lake would supply water of a much better quality than the shallow Lake Erie, which is to be condemned as a source of potable water. But the Adirondack supply is vastly more attractive.

The Jubilee of Anæsthesia.

In connection with the celebration during the past year in Boston of the semi-centennial of the discovery of the anæsthetic properties of ether, the following extracts from the minutes of the Albany County Medical Society may be read with interest. At a special meeting of the society, held October 10th, 1864,

DR. PETER MCNAUGHTON, the President, after calling the meeting to order, announced that the society had been convened for the purpose of meeting with Dr. Wm. T. G. Morton, of Boston, who wished to give an account of his discovery of, and early experiments with, ether as an anæsthetic agent.

Dr. Morton was then introduced by the President, and proceeded with his account, stating that in his early experiments in the etherization of animals the result was usually fatal, because of the impure quality of the ether then used. After he had succeeded in obtaining pure ether, and had himself been under its influence, he proceeded to make a practical application by etherizing his patients while extracting their teeth.

The prejudice that existed against the use of ether, not only among the public, but in the medical profession, rendered it extremely difficult to induce individuals to try this new agent, and the expense of preparing a pure article at that time was no small matter, the cost being about fifteen dollars per ounce.

Notwithstanding the expense of preparing pure ether, and this stubborn prejudice against its use, Dr. Morton, being convinced of its utility, determined to bring it into general use, but the prejudice against it was so strong and universal that he not only expended the enormous sum of one hundred and fifteen thousand dollars for the purpose of convincing the medical profession and the

public of its use, but was himself arrested and subjected to a medical examination to settle the question of his sanity, which had been raised in consequence of the pertinacity with which he was endeavoring to bring this new agent before the public.

Dr. M. had just returned from the United States army, where he was sent by the government to superintend the administration of ether, and test its value as an anæsthetic agent. He stated that it was used on all the battle fields, and so great has been the change of opinion among the public and in the profession in its favor, that a surgeon who now operates without giving an anæsthetic agent is liable by law to punishment.

In conclusion the doctor exhibited the gold medal of the French Academy, which had been presented to him as the honored discoverer of etherization. The gold medal, the Monthyon prize, which had never been awarded to any individual, excepting Edward Jenner.

After Dr. Morton's remarks a vote of thanks was given him, and a committee of five was appointed to arrange a plan for soliciting subscriptions for the Morton fund, which was being raised in Boston for the purpose of proving the high appreciation held by Dr. Morton's fellow-countrymen, of the great boon which he had conferred upon humanity.

At the ensuing annual meeting of the society, held November 8, 1864, the committee of five reported that they had determined that an opportunity should be offered Dr. Morton to give an account to the citizens of Albany of his discovery. He had accordingly addressed a highly respectable audience in the chapel of the Albany Female Academy, and after this address an appeal to the citizens for contributions to the Morton fund had had a most generous response—the sum of three thousand dollars having been contributed.

Albany Hospital Training School for Nurses.

The need of a training school for nurses in Albany has long been felt, and efforts to secure one have at last proved successful in an organization in connection with the Albany Hospital. The objects of the school are, primarily, the perfection of the ward service of the Hospital. Further than this, however, there will accrue distinct advantages to the facilities for clinical instruction for the students of the Medical College; there will be a supply of qualified graduate nurses for the demands of private nursing practice of the city and vicinity, and an opportunity will be afforded young women to acquire a technical education in a department which offers fair and dignified means of gaining a livelihood.

At a meeting held November 23, 1896, the organization was com-

pleted by the election of the following named Board of Managers, who will act with the governors and medical and surgical staff of the Hospital:

Mrs. Wm. L. Learned, president; Mrs. Frederick Townsend, vice-president; Mrs. Edward Hun, secretary; Miss Abby S. Lansing, treasurer; Mrs. Samuel Hand, Mrs. A. Vander Veer, Miss Sarah B. Potts, Mrs. J. W. Tillinghast, Miss Jessie K. Myers, Mrs. B. W. Arnold, Mrs. Charles R. Knowles, Mrs. Luther H. Tucker.

The school has been fortunate in securing the services, as superintendent of nurses, of Miss Emily MacDonnell, who has had similar duties in other training schools, and has recently been connected with the Johns Hopkins Hospital, at Baltimore.

A graded course of instruction, covering three years, has been adopted, and will include practical lessons in the following departments of nurses' work:

1. Management of helpless patients, changing of bed-clothing, feeding, the prevention of bed-sores; 2. Application of poultices, fomentations, blisters, cups and leeches; 3. Administration of enemas and douches, and use of the catheter; 4. Application of massage and electricity; 5. Observation and recording of temperature, pulse and respiration, and keeping of bedside notes; 6. Preparation and administration of diet; 7. Bathing: water, vapor, air baths, etc.; 8. Surgical work: bandaging, preparation of antiseptic dressings, care of wounds; 9. Examination of the secretions and excretions; 10. Emergencies: hemorrhage, asphyxia, shock; 11. Drill in the management of patients before, during and after surgical operations; 12. The care of convalescents and the occupation of chronic cases; 13. Administration and doses of medicine, including the use of the hypodermatic syringe; 14. Ventilation and the proper care of sick rooms, utensils and clothing; 15. Midwifery; 16. District nursing.

The following course of lectures has been arranged:

FIRST YEAR.—Anatomy, 5 lectures, Dr. Craig; Physiology, 3 lectures, Dr. Blumer; Materia Medica, 5 lectures, Dr. Van Rensselaer; Hygiene, 5 lectures, Dr. Tucker; Bacteriology, 4 lectures, Dr. Blumer.

JUNIOR YEAR.—Obstetrics, 6 lectures, Dr. Boyd; Observation of Patients, Symptomatology, 3 lectures, Dr. Mosher; Diseases of the Lungs, Tuberculosis, 3 lectures, Dr. Ward; Acute General Infectious Diseases, 4 lectures, Dr. Hun; Diseases of the Circulatory System

and Kidneys, Uranalysis, 2 lectures, Dr. MacFarlane; Diseases of the Digestive System, 1 lecture, Dr. Van Rensselaer; Diseases of the Nervous System, Insanity, 3 lectures, Dr. Mosher; Dietetics, 2 lectures, Superintendent of Nurses.

SENIOR YEAR.—Surgery, 5 lectures, Dr. Macdonald; Fractures and Dislocations, 2 lectures, Dr. Hailes; Gynæcology, 4 lectures, Dr. Vander Veer; Care of Children, 4 lectures, Dr. Boyd; Surgical Diseases of Children, 3 lectures, Dr. Morrow; Massage, 1 lecture, —— ——; Electricity, 1 lecture, Dr. Bartlett; Diseases of the Eye, 1 lecture, Dr. Merrill; Diseases of the Ear, 1 lecture, Dr. Bendell; Diseases of the Nose and Throat, 1 lecture, Dr. Bigelow; Diseases of the Skin, 1 lecture, Dr. Curtis; Ethics of Nursing, 1 lecture, Superintendent of Nurses.

Medical News.

— THE annual meeting of the Albany Medical College Alumni Association of Greater New York was held December 17th, 1896, at the residence of the President, Dr. John W. Warner, No. 107 W. 72d street, New York city. The following officers were elected for the ensuing year: President, William H. Thomson, M. D., '59; vice-president, Reuben B. Burton, M. D., '55; secretary, Warren C. Spalding, M. D., '81; assistant secretary, Henry T. Brooks, M. D., '87; treasurer, Edward F. Quinlan, M. D., '68; governors (2 years), William Stevens, M. D., '76; (2 years), Frederick Loughran, M. D., '90; (1 year), L. N. Lanehart, M. D., '84; (1 year), Henry F. C. Muller, M. D., '87; *ex-officio*, William Hailes, M. D., President A. M. C. Alumni Association.

The annual banquet is to be held Thursday, January 21st, 1897. An elaborate programme is being arranged, and all graduates of the college who may desire to attend may procure tickets from the secretary.

— The 91st Annual Meeting of the Medical Society of the State of New York will be held January 26, 27 and 28, 1897, in Jermain Hall, Albany, commencing at 9:15 A. M., on the 26th, and ending at 1 P. M. on the 28th.

The following provisional program has been issued:

TUESDAY MORNING SESSION, 9:15 O'CLOCK.

President's inaugural address, reports of officers and committees and executive business.

PAPERS. — 1. Two cases of Acute Intestinal Obstruction from Foreign Body with Operation, Dr. C. Wilmot Townsend, New Brighton. 2. Excision of the Coccyx for Fracture and Necrosis, with a report of three cases, Dr. Edward N. Liell, New York. 3. The Fitting of Glasses, Dr. M. L. Foster, New York. 4. A Contribution to the Study of Cough due to Irritation of the Upper Respiratory Tract, Dr. Chas. N. Cox, Brooklyn. 5. A Consideration of Prolapsus Uteri, with Especial Reference to its Radical Treatment in the Aged, Dr. Andrew F. Currier, New York. 6. Some Disease of the Alimentary Canal in the light of its Development and Ancestry, Dr. Woods Hutchinson, Buffalo. 7. Some Unusual Causes of Cough, Dr. Emil Mayer, New York.

Election, by districts, of members of the Committee of Nomination, at close of morning session.

TUESDAY AFTERNOON SESSION, 2:15 O'CLOCK.

PAPERS—1. Fancies and Facts in our Work, Dr. Joseph Eastman, Indianapolis, Ind. 2. The Correction of Depressed and Saddleback Deformities of the Nose by Operations performed subcutaneously, without the aid of Metallic or other Artificial Supports, Dr. John O. Roe, Rochester. 3. Gauze Drainage in Surgical Gynæcology; Dr. W. E. Ford, Utica. 4. Observations on Abdominal and Pelvic Surgery; Preparation, Operation and Results, Dr. W. Gill Wylie, New York. 5. The Merits of Abdominal Hysterectomy (with modified technique) for large Tumors, as contrasted with the Operation of Marcellement, Dr. Chas. A. L. Reed, Cincinnati, Ohio. 6. Absorbable Ligatures and Sutures in Pelvic Surgery, Dr. Walter B. Chase, Brooklyn. 7. Obstetrical Discussion: I. Introduction — Puerperal Eclampsia, Dr. William Warren Potter, Buffalo. II. Indications for, and technique of, the Induction of Premature Labor, Dr. James P. Boyd, Albany. III. Infection of the Puerpera, Dr. A. B. Miller, Syracuse. IV. Obstetric Delivery by Abdominal Section — Indications and Methods, Dr. Willis G. Macdonald, Albany. V. Relations of Posterior Displacements to Pregnancy, Dr. Matthew D. Mann, Buffalo. VI. Present Treatment of Fibroids, Associated with Pregnancy, Dr. A. Vander Veer, Albany.

Discussion by Dr. W. M. Polk, New York; Dr. H. J. Boldt, New York; Dr. C. A. Von Ramdohr, New York; and Dr. Geo. M. Edebohls, New York.

TUESDAY EVENING SESSION, 7:15 'OCLOCK.

PAPERS — 1. Practical Application of X-Ray in a case of Fracture, Dr. William Hailes, Albany. 2. Photography of the Living Urinary Bladder, Exhibition of Photographs and Instruments and some Improvements in Urethroscopic Apparatus, Dr. W. K. Otis, New York. 3. X-Ray Stereopticon Exhibition, Dr. Wm. J. Morton, New York.

WEDNESDAY MORNING SESSION, 9:15 O'CLOCK.

PAPERS — 1. A Contribution to the Study of Amoebic Dysentery, Dr. Chas. E. Lockwood, New York. 2. Practical Points relating to the Diagnosis and Management of Syphilitic Brain Diseases, Dr. E. C. Spitzka, New York. 3. The Treatment of Locomotor Ataxia, Dr. Landon Carter Gray, New York. 4. A Case of Erythromelalgia, Dr. Henry L. Elsner, Syracuse.

5. Strophanthus; a Clinical Study, Dr. R. W Wilcox, New York. 6. Should not the Crédé Method be made Obligatory? Dr. Lucian Howe, Buffalo. 7. Discussion on the Relation of Impure Drinking Water to Disease and the Cure and Prevention of the latter; prepared by Dr. Henry Hun, Albany: I. Common Causes of the Contamination of Drinking Water, Dr. T. M. Cheesman, New York. II. Diseases which can be directly traced to Contaminated Drinking Water, Dr. Geo. Blumer, Albany. III. Statistical Inquiry into the Relation of Contaminated Drinking Water and Typhoid Fever, Dr. J. S. Billings, Jr., New York. IV. Dangers of the domestic use, other than drinking, of Contaminated water, Dr. G. R. Freeman, New York. V. Methods of Purification of Impure Water, Dr. T. B. Carpenter, Buffalo. VI. Methods of Prevention of Pollution of Water, Dr. E. K. Dunham, New York. VII. Life History of the Typhoid Bacillus outside the Body, Dr. F. C. Curtis, Albany. VIII. Bacteriological Diagnosis of Typhoid Fever, Dr. J. S. Ely, New York. IX. Typhoid Fever in Children. Dr. W. P. Northrup, New York. X. Medicinal and Dietetic Treatment of Typhoid Fever, Dr. W. S. Ely, Rochester. XI. External and Internal Use of Water in Typhoid Fever, Dr. C. G. Stockton, Buffalo. XII. Importance and Practical Method of Disinfection of Excreta of Typhoid Patients, Dr. W. G. Thompson, New York.

WEDNESDAY AFTERNOON SESSION, 2 : 15 O'CLOCK.

PAPERS — 1. Double Murphy Button and Anastomosis, Dr. J. H. Glass, Utica. 2. Some Clinical Cases of Disease of the Testicle, Dr. L. B. Bangs, New York. 3. Hereditary Syphilis, Dr. A. Jacobi, New York. 4. Acute Inflammation of the Gall Bladder, Dr. Maurice H. Richardson, Boston, Mass. 5. Personal Experience in Hernia of the Bladder, Dr. C. L. Gibson, New York. 6. The Management of Club Foot : (*a*) When to Commence; (*b*) How to Apply Simple and Efficient Mechanical Treatment; (*c*) When to Operate; (*d*) Choice of Operative Procedure; (*e*) Rules Governing the same, Dr. A. M. Phelps, New York. 7. Rectal Discussion : I. Stricture of the Rectum, its Etiology and Treatment, Dr. Joseph M. Matthews, Louisville, Ky. II. The Surgical Treatment of Cancer of the Rectum, Dr. Daniel Lewis, New York. III. When is Colotomy Justifiable? Dr. Charles B. Kelsey, New York. IV. The Proper Method of Treating Internal Hemorrhoids, Dr. Robert T. Morris, New York. V. Preventative, Operative and After Treatment of Fistula-In-Ano, Dr. Edward Clark, Buffalo. VI. Prolapsus of the Rectum, Dr. George R. Fowler, Brooklyn.

WEDNESDAY EVENING SESSION, IN THE SENATE CHAMBER : 7:45 O'CLOCK.

Anniversary address by the President. Annual dinner at the Kenmore Hotel at 9: 30 o'clock.

THURSDAY MORNING SESSION, 9: 30 O'CLOCK.

Report of the Committee of Nomination.

PAPERS — 1. The Importance of Choked Disc (optic neuritis) as a Symptom of Brain Tumor, Dr. William C. Krauss, Buffalo. 2. Notes of Cases in Suggestive Therapeutics (hypnotism), Dr. H. S. Drayton, New York. 3. The Comparative Value of Optometric Methods, Dr. C. M. Culver, Albany. 4.

Deficient Excretion from Kidneys not originally diseased, and some diseases peculiar to women, and diseases of the skin, Dr. L. D. Bulkley, New York. 5. The Necessity of New Methods of Early Diagnosis in Tubercular Disease to Curative Treatment, Dr. J. B. Ransom, Dannemora. 6. A Rare Complication of Acute Rheumatism, Dr. Eugene Beach, Gloversville.

Obituary.

WILLIAM H. WOODRUFF, M. D.

Dr. William H. Woodruff died at Pine Bush, Orange county, N. Y., November 30, 1896, aged 65 years.

Dr. Woodruff was of Colonial descent, and was born in Walden, Orange county, N. Y., May 28, 1831. He attended Montgomery Academy and Union College, graduating from the latter in July, 1851. After a preliminary medical course at Castleton, Vt., he attended the Albany Medical College for two continuous terms and graduated in 1854. He then settled in Pine Bush, where he continued in active practice until the time of his death. He was a member of the Orange County Medical Society, town health physician, and for a number of years was United States examining surgeon for pensions. He was married in 1850, and had five children, four of whom, two sons and two daughters, with his wife, survive him. The sons are physicians, and are both graduates of the Albany Medical College, Dr. Richard A. Woodruff, of the class of 1886, and Dr. William J. Woodruff, of the class of 1894. Dr. Woodruff was President of the Alumni Association for 1894.

RICHARD BEEBE, M. D.

The ANNALS notes with regret the death of Dr. Richard Beebe, in North Egremont, Mass., in October last. Although not an alumnus of the Albany Medical College, Dr. Beebe was one of its firmest friends, and his sons, Drs. John B. and George H. Beebe, graduated in 1893 and 1894, respectively. Dr. Beebe was seventy-two years of age. His death resulted from an accident. He fell through a trap-door in his barn, sustaining considerable shock and a severe bruise on the back of the head. Cellulitis, involving the arm to the shoulder, followed, with symptoms of general infection. This continued for about ten days, when there were indications of improvement. Then there supervened gangrene of both legs, and failure of strength

rapidly ensued. Many touching tributes to the memory of Dr. Beebe have been made, indicating a high degree of respect and affection for him in the community in which he practiced.

FREDERICK D. MORRILL, M. D.

Dr. Frederick D. Morrill died suddenly, during an attack of pneumonia, January 1, 1897. Dr. Morrill was born at Wakefield, Mass., August 3, 1855. He attended the grammar schools of Boston and Albany, and graduated from the Albany Medical College in 1881. He has since practiced in Albany, and has filled several public medical offices. A memorial meeting of the Albany County Medical Society was held January 2, 1897, at which appropriate resolutions were adopted. The funeral was conducted by the Ancient City Lodge, No. 452, F. and A. M., of which the deceased was a member.

Scientific Review.

The Serum Diagnosis of Typhoid Fever.—That the diagnosis of typhoid fever is a matter of no little difficulty, and especially in cases presenting atypical symptoms and running an abnormal course, is the experience of every clinician. The desirability of some method by which typhoid can be positively diagnosed is, therefore, quite manifest.

It is believed that we now, fortunately, have a method by which we will be able not only to confirm the diagnosis of well-worked out typical cases of typhoid, but also a means by which the differential diagnosis of this affection from other conditions will be a matter of comparative ease.

The recent clinical application of the specific serum reaction in typhoid fever is the immediate result of experimental medicine and bacteriological investigation.

Pfeiffer, as the result of his extended and brilliant researches upon Asiatic cholera, found that the serum of animals immunized from cholera, when introduced into the peritoneal cavity of guinea pigs with a virulent culture of the cholera spirillum, caused the latter to lose their mobility and undergo dissolution in avery short time. If immune serum was not introduced the organisms grew and the animal succumbed. This is known as Pfeiffer's phenomenon, and

is used for the recognition and verification of cultures of the cholera spirillum.

This method was subsequently used for the typhoid and other micro-organisms. It was soon observed that the immunized serum, when used alone and outside the body, exerted the same inhibitory and agglutinative action upon the typhoid as well as other mobile organisms. The application of this clumping phenomenon in experimental medicine was made use of by Charrin, Roger and Bordet, and its utilization in the differential diagnosis of bacteria by Gruber and Durham.

Widal, recognizing the value of the observations of Pfeiffer, Gruber, Durham and others, was the first to appreciate the clinical importance of these facts, and to observe the reaction produced by the blood serum of patients suffering from typhoid fever upon the typhoid bacillus.

This phenomenon, upon which the diagnosis of typhoid fever depends, consists in a clumping and agglutination of the typhoid bacilli when mixed with the blood serum of typhoid patients.

Widal's first communication was made to the Société des Hopitaux de Paris, June 26, 1896.

In this paper he describes his method as follows: Obtain a syringeful of blood from a vein of the forearm, decant the serum and add a few drops to a bouillon tube (in the proportion of 10 or 15 of bouillon), inoculate with the typhoid bacillus, and place in the incubator for 24 hours, at the end of which time, if the case be one of typhoid fever, there is seen a white precipitate at the bottom of the tube. A drop examined under the microscope shows the bacilli grouped and agglutinated.

Since this communication the *technique* as described by Widal has been much modified by different workers.

The one which Grünbaum recommends is perhaps the better of the rapid and more reliable methods. He advises obtaining the blood by pricking the ear or finger, and drawing it into a U-shaped capillary tube, and this centrifugalized. The serum is then drawn into a second straight capillary tube, graduated from 1 to 16. The serum is aspirated to the point marked 1, and the bouillon to the point marked 16, which represents a dilution of 16 times. After mixing, this is expelled into a watch glass. A loopful of a 24-hour culture of typhoid is thoroughly mixed with 1 c. cm. of bouillon.

A drop of the diluted serum and a drop of the diluted typhoid

culture are thoroughly mixed upon a cover-slip, and examined as a hanging-drop preparation. It is advisable to make a control cover-slip preparation from the typhoid culture to make sure that there exists no clumping of bacilli previous to mixing with the serum.

Widal was able to demonstrate the agglutinative action when serum alone was used, with the fresh blood, and also with a watery solution of the dried blood.

Dr. W. Johnson, of Montreal, has used the latter method quite extensively, and reports reliable results by its use.

The new method of diagnosing typhoid fever has been tested in a large and varied number of diseases, and in none but typhoid (one or two exceptions) has the agglutinative action been observed.

Numerous reports have been lately published, not only confirming Widal's observations of the specific action of the serum of typhoid patients upon the typhoid bacillus and its practical utilization in hospital practice, but also of a number of obscure cases of clinically unrecognized typhoid, in which by the application of this method their true nature was made known.

Grünbaum obtained a positive reaction in 8 cases of enteric fever and a negative result in 32 other maladies, with the exception of a case of jaundice, in which a well marked reaction was observed.

Dr. E. B. Black (*Johns Hopkins Hosp. Bull.* Dec., 1896,) reports the examination of 20 cases of typhoid fever with a positive result in 11 and a partial reaction in 6; and J. J. MacKenzie (*Canadian Practitioner*, Dec., 1896) examined 61 cases of typhoid and failed to obtain a positive result in but 4.

It is interesting to note that the reaction may not be observed during the first few days, but that it is most constant after the middle of the second week of illness.

Ch. Achard and R. Bensaude, in a recent study of the agglutinating properties of the serum of typhoid patients (Soc. de Biologie, Nov. 27, 1896), conclude that the serum of patients attenuated by convalescence shows itself more active to some cultures of typhoid and less so to others under similar conditions, and it also would appear from their investigation that the agglutinative properties of the serum obtained from typhoid patients is not absolutely specific for the typhoid bacillus, but that other micro-organisms closely allied to the typhoid also exhibit this property.

The fact that the serum is not *rigorously* specific in its reaction to the typhoid bacillus is of experimental and bacteriological interest

only, and the value and practical utility of the serum diagnosis in clinical medicine remain considerable. When a positive reaction is obtained there can exist little, if any, doubt as to the nature of the affection, but from its absence (which occurs in a small proportion of cases) it cannot as positively be inferred that the disease is not typhoid.

From what has been said it is readily seen that the value of the serum diagnosis of typhoid fever is inestimable in clinical medicine and the results of its application quite obvious. The applicability of the method outside of hospital services, it is true, is attended with difficulty and inconveniences. The use of the method could become more universal by the establishment of facilities for such work in the already existing city laboratories. Upon favorable report of the method by Dr. Biggs, of New York city, the Board of Health of that city have this subject under their consideration.

A. J. LARTIGAU.

Current Medical Literature.

Tetania Gravidarum. — Neumann (*Archiv. für Gynäkologie, Vol. XLVIII*) describes two cases of tetania gravidarum from Schauta's Clinic in Vienna. In the literature of the subject Neumann has found in all twelve cases. In both the cases described the electrical and mechanical irritability of the nerves was found, as well as the facial and Trousseau's phenomena. As a new symptom, the writer describes the coincidence of uterine contraction and attack of spasm. Pregnancy must not be regarded as a cause, but as a predisposing moment. In its therapeutic aspect, a warning must be given against chloroform and ergot as producing toxic tetanies.

Symptoms of Paralysis Agitans.— At a meeting of the Medico-Chirurgical Society, of Edinburgh, July 1, 1896 (*Edinburgh Medical Journal, October*, 1896), Dr. Harry Rainy showed a case of paralysis agitans, presenting, in addition to the usual symptoms, a tremor of the eyelids, occurring from time to time, followed by closing of the eyes, which the patient was unable to open, except by raising the lids with his hand. If he raised the left lid with his hand, the right eye would open of itself, but when he raised the right eyelid, no effect was produced on the left.

At the Congress of Russian Physicians at Kiew (*St. Petersburger Medicinische Wochenschrift, November* 7, 1896), Professor Motschutskowsky made the following observation: If a patient with paralysis agitans be permitted to wrinkle the forehead, and remain for a minute in this condition, the wrinkling does not immediately disappear, but continues for some time. The symptom is one of the most constant manifestations of the disease. In ten cases it was very outspoken in nine, and somewhat less pronounced in the tenth. The

condition is due to the characteristic muscular rigidity, which is best observed on the superficial flat and thin frontalis. It is of importance and of diagnostic significance, especially in the slightly marked cases.

Pathology of Multiple Sclerosis.—*The Lancet, November* 21, 1896, makes the following abstract from the *Neurologisches Centralblatt*, of a very important paper by Professor Strümpell, on this subject. The ætiology of many nervous diseases has in recent years, he says, been successfully investigated, yet about such a common disease as multiple sclerosis little or nothing is as yet known for certain. Marie's view that it is in most cases a sequel of acute infectious disease can scarcely be maintained, for whereas in many cases of acute infectious disease multiple inflammatory foci in the central nervous system occur as a sequel, in thirty or forty cases of his own of multiple sclerosis there could only be found an occasional one in which there seemed to be some possible connection between a preceding infectious disease and the condition referred to. Indeed, in his last twenty-four cases, in not a single one could any such relation be traced. And so it is also with reference to the toxic origin suggested by Oppenheim and others. No doubt where the patients are dwellers in towns and work in metals, etc., the incidence of the disease may suggest some such connection. But in places such as Erlangen, in which the patients are for the most part peasants or country dwellers, such a view fails to find any support. Nor can the vascular origin of the sclerotic foci be regarded as likely. It is generally conceded that multiple sclerosis has no connection with syphilis, and it is not easy to understand why certain small vessels in the nervous system only should become diseased in some unknown manner, while similar vessels elsewhere are unaffected. Professor Strümpell's suggestion is that multiple sclerosis may depend upon some congenital abnormalities in the nervous system. This view was suggested to him recently by a case which he published, and in which there were combined a marked condition of hydromyelia, central gliosis, and multiple sclerosis. He had previously observed a case of hydromyelia with multiple sclerotic foci. Further points in support of such a view are that it is a disease of early life (the first symptoms can often be actually traced back to childhood), and that the axis cylinders are so long spared. It is further suggested that the change may occur first in the neuroglia and that there are foci where it undergoes proliferation — a condition, indeed, of multiple gliosis — whose origin is to be sought in some congenital peculiarity. Professor Strümpell directs attention to two conditions in the symptomatology of the disease. First, as to the character of the disordered movement, he believes it does not essentially differ from the ataxy of tabes, and, secondly, he finds that the abdominal reflex is very frequently absent.

Sarcomatosis with Purpura Hemorrhagica.—In the November number of the *Journal of Experimental Medicine*, C. F. Martin and W. F. Hamilton publish two cases of this rare syndrome.

They state that such cases are of uncommon occurrence, but that Hilton Fagge reports six such in his book. The first case was that of a patient with no signs of new growth and with numerous subcutaneous hemorrhages all over the body, some of which had a distinctly nodular feel. At the *post*

mortem there were hemorrhages in the omentum, intestine and bladder mucosa, and a new growth of the uterus and right ovary. The microscopical examination showed a round-celled sarcoma, the cells of which in many places infiltrated the vessel walls, but did not form tumor emboli.

The second case was one of general purpura over the limbs and body, associated with definite skin nodules, which, in many places, were surrounded by a zone of hemorrhages. There was no evidence of primary malignant disease, but no vaginal examination was made.

The *post mortem* showed hemorrhages into the intestinal serosa, kidney, pelvis, bladder, lungs, pericardium and stomach, and both ovaries were sarcomatous.

Microscopically the growth was found to be a spindle-celled sarcoma, and in the metastases there were both involvement of the perivascular tissues and actual tumor emboli.

The writers conclude that the purpura in these cases is due to several factors, the main one being the involvement of the vascular system by the sarcomatous elements. In some instances, however, where the hemorrhages bore no relation to the tumor cells they could not be explained in this way, and are, then, probably due to changes in the vessel walls and blood from the cachexia and high fever which accompanied the cases.

G. B.

The Escape of Diphtheria Bacilli into the Blood and Tissues. — A. A. Kanthack and J. W. W. Stephens publish their observations on this subject in the July number of *The Journal of Pathology and Bacteriology*.

After a general review of the literature of the subject, the writers state that it is evident that in fatal cases of diphtheria the escape of the bacillus from the seat of infection is by no means uncommon, and that the generally accepted statement that the bacillus is found in the false membrane, and in the membrane alone, and that it does not enter the blood, or lymphatic stream, is by no means correct. In their own observations (on fatal cases) they found the bacillus frequently in the cervical and bronchial lymph glands, always present in the lungs, in the spleen ten times out of twenty-one observations, and in the kidneys twice out of three observations.

In the lungs definite broncho-pnemonia accompanied the bacterial invasion in over fifty per cent. of the cases, and the pneumonia was generally due to the bacillus diphtheriae, and not to secondary infection, as is generally stated. In nearly all the cases there was involvement of the larynx in the membrane formation, and in many of them tracheotomy had been performed.

The bacilli in the spleen were not associated with any particular lesion of that organ, but were always associated with broncho-pnuemonia.

The authors came to the conclusion that their researches have a definite bearing upon the process of intoxication in diphtheria.

The prevalent view has been that the B. *diphtheriæ* produced a ferment, that this ferment was absorbed into the blood and tissues, and produced from them a toxine which was an albumose. This view was based on the observation that there could be abstracted from the blood and spleen of fatal cases such albumoses which caused fatal diphtheria in rabbits. This view is open to several

objections. 1. There is no evidence that the ferment when inoculated into animals caused the formation of the albumose. 2. The ferment itself causes more active symptoms than the albumose. 3. Evidence is accumulating to show that the specific toxines are not albumoses, but are simply associated with them.

The authors think that the simplest view, after their observations, is that the bacilli secrete a toxine, which is directly absorbed, and acts directly as a tissue and nerve poison.

The above observations are of clinical importance in that the presence of laryngeal diphtheria, or broncho-pneumonia, would indicate the necessity of very large doses of anti-toxine to counteract the immense amount of toxines which are being formed in such cases.

G. B.

A Study of Types of Respiratory Movements.— Under this heading G. W. Fitz contributes an interesting paper to the *Journal of Experimental Medicine for November.* Fitz's paper is based upon the study of a large number of boys and girls, men and women, the latter either used to unconstricting or to constricting dress.

The conclusions reached are :

1. That children of the two sexes differ very little in the character of their respiratory movements.

2. That between girls and women, and boys and men, there is little or no difference in respiratory type.

3. That child-bearing does not permanently affect respiration.

4. That the natural type of respiration in both sexes is one in which the movement is fairly balanced between the chest and the abdomen, the abdominal movement being somewhat in excess.

5. That in typical unconstricted individuals the chest contributes about the same bulk of air as does the abdomen.

6. That constricting dress causes preponderance of thoracic movement in ratio to its restriction of abdominal movement and to the sensitiveness of the nervous co-ordination.

G. B.

Congenital Intestinal Occlusion.— Th. Hecker in the *St. Petersburger Medicinische Wochenschrift, November* 21, 1896, reports a case, in which a proctoplastic operation, followed by abdominal section and the formation of artificial anus, was made unsuccessfully, the child living 4 days, 6½ hours. The autopsy revealed atresia intestini, peritonitis fœtalis vetusta, perihepatitis, perisplenitis, peritonitis incipiens acuta. The intestine appeared as follows: The distance between the pylorus and the anus præternaturalis was 67 cm., from there the intestine extended 30 cm., and ended in a blind sac. Beyond lay a cord of the thickness of a quill, taking the place of the greater part of the tractus intestinalis comprising the lower part of the jejunum, the ileum, the whole large intestine and the rectum to the anus. The cœcum with a 4 cm. processus vermiformis was present, and was somewhat above the normal site. The mesentery was thickened and shortened, with numerous enlarged mesenteric glands. The omentum majus was only rudimentary.

The writer reviews the literature of the subject, pointing out the ætiological relation of fœtal peritonitis and twisting upon the fœtal axis. He emphasizes the importance of the inflammatory process as the origin, and recalls the developmental history of the alimentary tract, by which its middle segment is shown to be longest open, and most liable to casualties.

In general the prognosis for cases of atresia is absolutely unfavorable. It is clear that such a small surface of intestinal mucous membrane is insufficient for absorption and nutrition. Such cases are the opposite of those showing the formation of string like stenoses by a short twist, which may be relieved by cœliotomy and resection of the intestine.

Practical Therapeutics.

The Therapeutic Action of the Cold Bath in Typhoid Fever as Determined by a Study of the Respiratory Chemistry.—In the November number of the *Archives Generales de Medecine*, Robin and Binet report their studies on this subject.

They made the discovery that the cold bath increased the amount of air inspired and expired and increased the amount of carbonic acid gas excreted and the amount of oxygen absorbed.

After carefully elucidating the various details of their studies, they conclude:

1. That in typhoid fever and other infectious diseases there is an exaggerated loss of nutrition, and large quantities of waste products, as well as of bacterial ptomaines invade the tissues, and are not excreted as fast as they are formed. These products are not split up owing to the decreased absorption of oxygen.

2. That our aim in such disease should be to increase oxidation.

3. That cold baths have a remarkable oxidizing power.

4. That they increase the respiratory processes in every way, but above all they increase the total sum of oxygen taken in, and they increase its absorption.

5. The respiratory change does not begin to take place until half an hour after the bath and reaches its maximum in an hour.

6. That the duration of the process cannot be sharply fixed, as it varies considerably.

7. That if the bath does not reduce the temperature it usually does not produce the change above mentioned.

With regard to the mechanism of the cold bath the authors state that it acts:

a. In diminishing the temperature and thus lessening the increased tissue destruction and the production of the toxines, which are important causes of fever.

b. In increasing oxidation and thus causing the transformation of the bacterial toxines into harmless, easily eliminable, soluble products.

c. By raising the arterial tension and increasing the heart's action, from which causes diuresis recurs and the products of tissue change are more easily carried off.

These effects are all stated to be due to a reflex action from the nervous system. G. B.

Gastric and Intestinal Antiseptics.—Dr. R. Patterson contributes an article on this subject to *The Practitioner* for November, 1896:

After pointing out the enlightenment we have had on such diseases as cholera Asiatica, cholera nostras, and diarrhœa in children, and suggestions which have been thrown out as to the possible intestinal origin of chlorosis, pernicious anæmia, etc., he states that we are still in a transition state regarding gastric and intestinal antiseptics, and lays down certain rules for guidance in their administration. With regard to gastric antiseptics the chief point is not to administer any drug which will disturb the normal functions of the organ. Certain drugs may interfere with the secretion of hydrochloric acid, and others may damage the gastric ferments. Medication should be as simple as possible, and in cases where we suspect that the stomach disturbance is simply due to stagnation of food, we should rely for a time on lavage alone. The most valuable drugs are stated to be pepsin and hydrochloric acid, which check fermentation, and the vegetable bitters, which are both tonics and antiseptics. Stress is laid upon the temperature of ingesta, it having been shown that medium and high temperatures increase the mobility of the stomach, while cold temperatures considerably decrease it.

With regard to intestinal antiseptics the danger of interfering with the digestive ferments is very great, especially in fevers, as typhoid, where their secretion is enfeebled by the disease. Then, again, intestinal antiseptics may lessen the natural defenses by killing bacteria which normally split up waste products.

The rule in all cases where intestinal antiseptics is desired is, first to empty the intestinal tract, and calomel is the ideal drug for this purpose, as it does not injure the mucous membrane, nor does it affect the ferments.

The advisability of using such drugs as salol, beta-napthol, etc., is doubtful, as we do not yet fully understand their action.

With regard to foods the author lays stress on the fact that the carbo-hydrates are antiseptic as well as nutritive. G. B.

Treatment of Eczema.— In the *St. Petersburger Medicinische Wochenschrift, November* 21, 1896, Dr. O. Peterson gives the following considerations :

1. Classification of eczema — acute, chronic, relapsing.
2. Period of development of the skin.
3. Condition of nutrition of the skin.
4. Hygienic surroundings and occupation of the patient.
5. The nervous system and its irritability.
6. The digestive and sexual organs.
7. Ability of the patient to apply treatment intelligently.

In acute and subacute attacks, refrain from irritants. In drying the skin and reducing the secretion, use a zinc paste, as follows :

℞ Zinci oxidi.
Pulv. amyli, āā part. j.
Ung. petrolei, part. ij.

M. et Sig. Apply twice or thrice daily with a glass rod, and cover with a thin layer of hygroscopic wadding.

For cleaning away this application, use almond oil, with or without one per cent. carbolic acid dilution. If there be a strong tendency to separation so that the paste adheres poorly, use one to two per cent. acetate of lead in vaseline, with addition of talc, two parts to four or six of vaseline. One to three per cent. alum, vaseline, talc salve is also good.

If blisters and secretion are diminished, but the skin still soft, a protection may be made of zinc gelatine :

℞ Zinci oxid.
Gelatin, āā 15.0.
Glycerin, 25.0.
Aquae dest. 45.0.

M. s. a. et Sig. Stand the box of gelatine before use in a bottle of hot water, and when dissolved apply with a glass rod. In about ten minutes a film is formed, which permits cleansing about the sore. In hairy or tender parts of the body, the paste cannot be used, and then white precipitate ointment or lead ointment may be applied.

For chronic eczema, hydrotherapy, in the form of local or general baths or hot compresses. For topic eczema with desquamation, tar ointment is useful.

Internally, besides general treatment, sodium salicylate and salol are recommended.

Treatment of Syphilodermata. — Gottheil in a clinical lecture delivered at the New York School of Clinical Medicine, November 25th, 1896, thus summarizes the various methods of treating the syphilodermata:

1. In the primary stage when only the chancre is present, no general treatment ; calomel locally.

2. As soon as the secondary period sets in, as shown by the general adenopathy, angina, cephalalgia and eruption, the internal treatment for mild cases should be one-fourth to three-fourths of a grain of the proto-iodide of mercury, t.i.d., continued for three months, or until the symptoms disappear. In severer cases with pustular eruptions, severe anginas, persistent headaches, etc., a course of six to ten intra-muscular injections of ten per cent. calomel-albolene suspension, five to ten minims at intervals of five to fifteen days, should be employed.

3. After completion of the course and cessation of the symptoms, employ tonics, etc., without specific treatment, for three months.

4. Thereupon a second calomel course as above, plus a small dose (fifteen grains) of iodide of potassium in milk after meals. This to be given whether later secondary symptoms of the skin and mucosæ appear or not.

5. Second intermission of treatment lasting three to six months, according to the presence or absence of symptoms.

6. In the second year, if tertiary lesions, marked by deeper and more localized ulceration are present, give the iodide of potassium in increasing doses, (60 to 600 grains daily), as may be necessary. Combine with it occasional courses of calomel injections. If no lesions appear, give a mild course of both.

The best local treatment of the syphilodermata is with the mercurial plaster-mull.

Medical Treatment of Tic Douloureux.— Ewart (in the *British Medical Journal, November* 21, 1896), emphasizes the importance of gout in the ætiology of this disease, and believes that this factor is often overlooked in the larvate forms. It may be recognized by the following indications :

1. It occurs often in the healthy with ruddy complexions, which is common in sthenic gout.
2. Presence of Heberden's nodules, or of tophi in the ears.
3. History of gravel or stone.
4. Nervous, gastric, intestinal and hepatic disturbances of long duration.
5. Strength of pulse and endurance of patient after prolonged pain and insomnia.
6. Adverse influence of alcohol and certain diet.
7. Presence of uric acid in the urine.

The nature of the ætiological action of gout is not explained, though it is thought to act by producing an irritability of the nervous system.

His treatment consists of sedative, restorative, alterative and tonic measures. As sedatives he recommends morphine and chloral ; as restorative agents, rest and a non-nitrogenous diet ; as alteratives, salts of iodine, mercury, guaiac, and for tonics, the vegetable tonics, massage and salt baths. The results which he obtained by mercury and the salts of iodine in cases which were not specific are most satisfactory. He gives the histories of several cases about to submit to an operation, which recovered under this line of treatment.

Flechsig Treatment of Epilepsy.— Dr. Spratling, Superintendent of the Craig Colony, tried the Flechsig treatment in twelve carefully selected cases of epilepsy, most of whom had received little or no benefit from the sole administration of bromide. Three could not take opium after the first two weeks on account of the profound stupor induced. The bromide treatment was then begun. In the remaining nine cases after the opium treatment was completed, bromide, in 30-grain doses, was administered for three months. The following results were obtained : one has had no attacks, two are greatly improved, three have had their attacks reduced one-third of their former frequency and severity, six showed no improvement.

(This treatment consists of large doses of opium, one grain increased to fifteen grains daily, for a period of six weeks. The opium is then suddenly stopped and 30 grains of bromide, three times a day, is administered for about two months, and finally gradually diminished to 40 grains per day.)

Contagious Impetigo, by William S. Gottheill, M. D.—(*Pediatrics, October*, 1896). This is a self-limited contagious disease of children appearing in localized epidemics, and first described by Tilbury Fox, in 1864. Accompanied by a moderate fever and some gastric disturbance, there appear on the face and hands groups of flat vesicles filled with transparent or cloudy serum. These dry up into characteristic golden-yellow crusts, which fall off in two or three weeks, leaving circular, reddened, non-ulcerated areas behind. Successive crops of vesicles may prolong the disease for two months or more. It is undoubtedly parasitic ; but, though Kaposi claims to have found it, the ætiological factor is still unknown. The treatment consists in removal of the

crusts with olive oil compresses, cleansing the skin with hot water and soap, boric acid solution, etc., followed by the use of Lassar's paste:

℞ Acid. salicylic, gr. xxx.
Petrolati, ℥ j.
Zinci oxidi
Amyli, āā ℥ ss.

Chemical Treatment of Morphinism.—Morphine excreted by the stomach narcotizes the gastric glands and inhibits the gastric secretion. When the patient is deprived of his morphine an opposite condition results, producing gastric and reflex nervous disorders. Hitzig, therefore, washes out the stomach and administers Carlsbad salts. Erlenmeyer neutralizes the excess of hydrochloric acid by bicarbonate of soda. He now intends to treat these cases by gradually diminishing the morphine, and at the same time administering hydrochloric acid.

Salicylic Acid in Rheumatism.—Jaccoud believes that salicylic acid is valuable only in the joint affections and not in the visceral complications of rheumatism, and, therefore, never prescribes it in rheumatic endocarditis or in the cerebral phenomena of rheumatism. He thinks that the viscereal complications are more common in cases treated with salicylate of soda.

Tonic and Cough Mixture.—

℞ Acid hydrocyan. dil, f ʒ ss.
Acid nitrici dil, f ʒ iij.
Glycerini, f ℥ j.
Inf. quassiæ, ad f ℥ viij.

Sig: Tablespoonful in water thrice daily.—*Begbie.*

Laxative for Children.—

℞ Sodii bicarbonatis, ʒ iij.
Pulv. rhei, ℥ ij.
Sodii sulph., ℥ j.
Ol. menth. pip., m xx.

M. et Sig: Half to one teaspoonful before breakfast. —*Journ. de Med.*

Antiseptic Insufflations in Whooping Cough.—

℞ Benzoin (powder), 10.0.
Salicylate of bismuth, 10.0.
Sulphate of quinine, 2.0.

This should be insufflated five times a day. Paroxysms of coughing are reduced in number and intensity, and the cure is rapid.

—*Moizard* (*Journ. de Mod. et de Chir. Prat*).

Gastralgia.—

℞ Spts. chloroformi, f ℥ j.
Ext. cannab. ind. fl., f ʒ ijss.
Aq. menth. pip. f ʒ vss.

M. et Sig: A teaspoonful to be taken occasionally.—*The Practitioner.*

Incontinence of Urine. —

℞ Tinct. nucis vom. mv.
Tinct. rhus aromat.
Tinc. cinchonae, āā mxlv.

M. et Sig: Ten to twenty drops at night before going to bed.

—*Comby* (*Medecine Moderne.*)

Cerebro-spinal Meningitis. — Dr. Jewuin, in the *Therapeutische Monatshefte, November*, 1896, recommends highly the treatment of cerebro-spinal meningitis by repeated daily baths at a temperature of 97° to 104° F.

Book Reviews.

A Treatise on Surgery by American Authors. For Students and Practitioners of Surgery and Medicine. Edited by ROSWELL PARK, A. M., M. D., Professor of the Principles and Practice of Surgery and of Clinical Surgery in the Medical Department of the University of Buffalo, Buffalo, N. Y.; Member of the Congress of German Surgeons; Fellow of the American Surgical Association; Ex-President, Medical Society of the State of New York; Surgeon to the Buffalo General Hospital, etc. *Vol. I. General Surgery*. With 356 Engravings and 21 Full-Page Plates in Colors and Monochrome. *Vol. II. Special or Regional Surgery*. With 451 Engravings and 17 Full-Page Plates in Colors and Monochrome, Philadelphia and New York. Lea Brothers & Co., 1896.

The various authors of these two volumes are to be congratulated upon the work accomplished therein. As a practical, useful and up-to-date book professors of surgery will not long delay recommending it to their students. Without going into detail it can be said that the list of contributors alone insures the respective merits of the work. Dr. Park is to be complimented upon the amount of good material accumulated, also the publishers upon the excellent manner in which they have printed the two volumes. In point of binding, illustrations, etc., the work is perfect. A. V.

Reading Notices.

S. L. REED, M. D., HIGHLAND PARK, KY., OCT. 28, 1896, WRITES: Have only time at present to copy notes in reference to case in which I used Bromidia. Was called suddenly early on morning June 10th to see Mrs. McG. Patient had been under treatment of Dr. R., who had been called, but failed to answer. Found patient suffering with acute mania, very violent and destructive. On questioning family, found patient had delivered herself four days previous of a three months' fœtus. Since that time patient had been receiving enormous doses of morphine, with no apparent result. As patient was beyond control, improvised a straight jacket of her husband's sweater and bicycle belt. Ordered half ounce Bromidia (Battle & Co.) every half hour until quiet. In two hours patient was sleeping. Patient continued to receive Bromidia whenever indicated, along with other treatment, and in a few weeks was apparently well, although Dr. R. still has her under observation. This will show the superiority of Bromidia over morphine, especially in cases with head symptoms.

I have had moderate success with Iodia, but could sing the praises of Papine in several columns if I had the time.

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Original Communications.

A CASE OF CONGENITAL STENOSIS OF THE PULMONARY ORIFICE AND OF THE CONUS ARTERIOSUS.*

BY HENRY HUN, M. D.,

Professor of Nervous Diseases in the Albany Medical College.

B. G., aged 27 years, single, brass polisher by occupation, but much of the time he has peddled fruit, has been exposed to bad weather, and has often slept out-of-doors at night. He entered the Albany Hospital in October, 1894. His family history is unknown. Patient could not walk until the age of five years. He was then compelled to wear braces for five or six years. At the age of thirteen he suffered from an attack of inflammatory rheumatism, which confined him in bed for several months, and since this attack he has never felt as well as he did before. He denies ever having had gonorrhœa or syphilis. Nine years ago while peddling fruit he was attacked by a shooting pain in the præcordia and by vertigo. He was put in bed, where he remained three months, and while in bed both legs swelled, and about this same time he had an abscess in the right inguinal region. After he got better from this attack, he worked at brass polishing. About four years ago he commenced to cough and to suffer from fainting spells, which lasted from five to twenty minutes. His cough has continued up to the present time, and is especially troublesome at night. He feels well on arising in the morning, but after walking about he begins to hawk and spit up blood in varying quantities. He can tell when severe hemorrhages are coming on by dark flashes appearing before his eyes. During the last two years he has fallen in the street during these attacks of hemorrhage, and has been unconscious for half an hour after them. Since last June he has had a choking sensation in the throat, swallows with great difficulty, and says it burns inside like fire. At first he had a hemorrhage almost every other day. At times he has bleeding from the nose, and has been in this hospital twice for this, and three times in St. Peter's Hospital, in Albany; also in New York, Rochester, Syracuse, Buffalo and Philadelphia hospitals. Most of the blood is bright red, but at times it is almost black. His appetite is fair, but he says that he has not been able to get his meals regularly. Since last spring he has lost a great deal of flesh.

*Read before the Albany County Medical Society on December 16, 1896.

Physical Examination.—Patient is well nourished. His fingers are clubbed and are cyanotic; his lips and the alæ nasi are thick and slightly cyanotic. Upon moderate exertion, such as going up stairs, he suffers from extreme dyspnœa, and his whole face becomes cyanotic. Both clavicles are slightly prominent, and the præcordia is bulging. He has a pronounced rachitic thorax. Both sides of the chest are prominent (the left the more so) at a point two inches above and inside of nipple, while there is a deep funnel shaped depression between these two prominences running down to the lower part of the sternum. Even when in bed and at rest, the respiration is accelerated. The left side of the chest expands more freely than the right, but the respiration is chiefly abdominal. Apex beat an inch below the nipple, and just outside the mammary line. No thrill can be felt anywhere over the heart, nor in the vessels of the neck. Pulsation in the vessels of the neck is rather more feeble than normal. No venous pulse can be seen in the neck. Slight dullness at right apex; elsewhere percussion resonance over chest is normal. The patient complains of tenderness on moderate percussion over the left side of chest. Area of cardiac dullness increased, commencing above at second intercostal space, running just outside the left nipple, and running one and a half inches to the right of the right border of sternum, measuring seven inches horizontally by five inches vertically. A loud blowing systolic murmur can be heard all over the præcordia. It is heard loudest at the junction of the fifth left costal cartilage with the sternum. It is transmitted to the apex, but there it is heard but faintly. It is heard quite loud in the second intercostal space close to the sternum on both the right and the left side — loudest on the left side — but not so loud even here as at the lower end of the sternum. It is also heard distinctly beneath each clavicle. The first sound of the heart at the apex is very faint; the second sound at the base cannot be heard at all. The systolic murmur heard over the heart is not transmitted into the vessels of the neck. A loud venous hum can be heard in the neck. Sub-crepitant râles on inspiration, and broncho-vesicular respiratory murmur are heard over right front above the third rib and in right suprascapular region. Elsewhere over the chest there is normal respiratory murmur. Abdominal examination is negative. Urine contains neither albumin nor sugar. The patient remained in the hospital about a month. After the first week in the hospital, the hæmoptysis ceased, and the patient steadily improved, and left the hospital feeling as well as usual.

Patient was readmitted to the hospital on November 20, 1894. An ambulance call came, and the patient was found in his room bleeding profusely from the nose, and very weak. On entrance at the hospital, the physical signs were not materially changed from those of a month ago. Several ulcers, however, were detected in the nose, which were the probable source of the hemorrhage. The patient remained in the hospital a couple of months, and was then discharged, but was admitted a few months later, and remained in the hospital until October, 1895, when I again began my hospital service. During the year he had grown in every way worse. He was very much emaciated and pigeon-breasted, with a strong retraction of the lower part of sternum and a bulging of præcordia. There was dullness over the whole front of the left chest, so that the cardiac dullness could not be mapped out. There was also dullness at

To Illustrate Dr. Hun's Article on "Congenital Stenosis of the Pulmonary Orifice and of the Conus Arteriosus."

Albany Medical Annals, February, 1897.

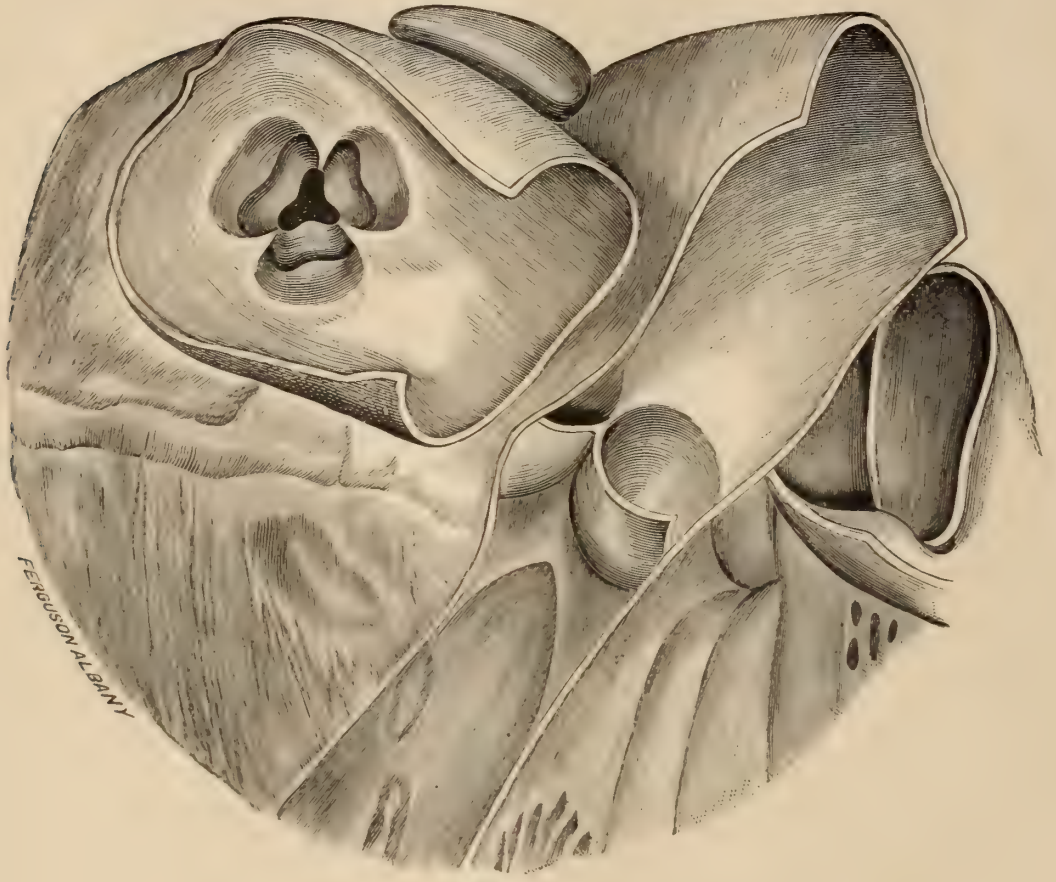


FIG. I.

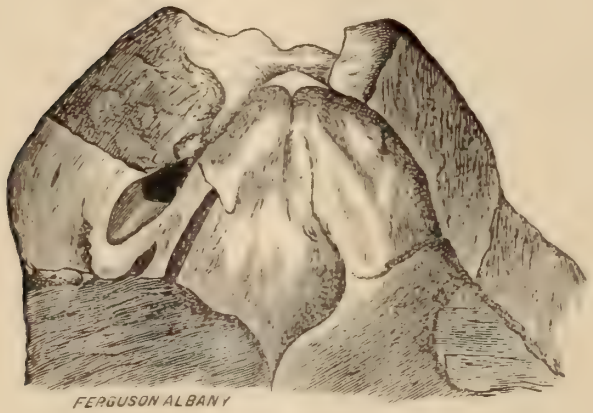


FIG. II.

FIGURE I. At the upper left part of this figure the pulmonary artery is shown cut widely open and the pulmonary valves are represented (not so clearly as could be desired) as grown together at their edges and forming a diaphragm, leaving only a small triangular opening, from the angles of which run down little ridges or frenæ. The aorta with the aortic valves is shown to the right of the pulmonary artery.

FIGURE II shows the conus arteriosus as seen from the right ventricle, the walls of which are cut and turned back and the diaphragm formed by the pulmonary valves is cut nearly through, leaving only a slight bridge anteriorly. The conus arteriosus is represented with its thick lining of connective tissue directly continuous with the pulmonary valves.

the right apex. There was a loud systolic murmur heard all over the sternum, and loudest at the junction of sternum with the ensiform cartilage. It was heard very feebly (evidently transmitted) at the apex. The first sound at the apex was sharp and clapping. The second sound of the heart could not be distinctly heard either over the pulmonary or aortic valves. No diastolic murmur was heard over the præcordial area. No murmur was transmitted into the subclavian. There was a systolic sound in the subclavian sharp and clapping. The right clavicle was very prominent, and beneath it was a well-marked depression. Bronchial respiratory murmur, with moist râles after cough at right apex in front, and well marked bronchial respiration in right supra-scapular fossa behind; otherwise respiratory murmur normal over chest, except for harsh respiratory murmur at left apex. There was no enlargement of the liver. Voice was almost completely destroyed by laryngeal ulceration.

Patient steadily failed, and the signs of pulmonary tuberculosis extended throughout the right and left lungs, and by the end of November he was so feeble that he could not leave his bed. He died on January 13, 1896.

I did not witness the autopsy, but was told that the principal lesions found were an extensive tuberculosis of both lungs, and an enlarged heart. The heart was given to me, and after having been preserved in alcohol, weighed thirteen and one-half ounces. The cavity of the right ventricle was a little larger than that of the left, and the walls of the right ventricle were fully as thick as, if not a little thicker than, those of the left, measuring half an inch in thickness. There was a great degree of stenosis of the pulmonary orifice. The pulmonary valves were grown together at their three edges, forming a ring in which traces of the individual valves could be seen. This ring had an irregular hole in its centre one-quarter of an inch in diameter. On looking downwards through rhe pulmonary artery towards the pulmonary orifice this orifice was almost completely closed by a dome-shaped diaphragm with its concavity turned towards the ventricle. On the upper surface of this diaphragm were three ridges or frenæ marking the lines of junction of the original three valves, and at the base of each original valve was a distinct depression or sinus. The hole in the center of this diaphragm was not originally circular but triangular; each angle running down between two original valves until stopped by their line of junction. (Fig. I) (After the heart had been examined by a number of physicians, and the pulmonic orifice had been strongly stretched by trying to force fingers through it, the orifice became circular.) This diaphragm was three or four times as thick as the original valve. This thickened connective tissue forming the diaphragm was continued down on the endocardium for about three-quarters of an inch; so that the conus arteriosus had a lining of thickened white tissue. (Fig. II). This seemed to have contracted and caused a great contraction of the conus arteriosus, so much so that the lumen was scarcely larger than was the hole through the pulmonary valves. The other valves of the heart, and the muscular tissue of the ventricles seemed to be entirely normal. Both auricles were thickened to about an equal extent, but the cavity of the right auricle was decidedly larger than that of the left. There was a valve-like opening in the foramen ovale. This opening was about a sixth of an inch long, and a tenth of an inch wide, and was valve-like in

character; so that it seemed that when the auricles were full of blood this opening might have been closed. There was no abnormality about any of the other valves of the heart, nor any other cardiac lesion. A very careful search was made with a probe for any communication between the ventricles, but none could be found. The ductus arteriosus was not removed with the heart, and could not, therefore, be examined, but the commencement of the pulmonary artery was slightly dilated.

We have here an uncomplicated case of pulmonary stenosis without any other cardiac abnormality except the insignificant opening in the foramen ovale, and such cases are not very common. It is much more common to meet with cases in which, in addition to the pulmonary stenosis there is some other cardiac abnormality, especially an imperfect closure of the inter-ventricular wall leaving a communication between the two ventricles, or a large opening in the foramen ovale. Stolker,[1] as long ago as 1864, collected the reports of 116 such cases, and since that time at least as many more have been reported. The *Transactions of the Pathological Society of London* contain the reports of a great number of such cases. There can be no doubt that all these cases are congenital, either the result of faulty development or due to an endocarditis at an early stage in fœtal development before the inter-ventricular septum is entirely closed, that is, before the third month. The perforation by inflammation of the already closed inter-ventricular septum, is probably an occurrence of extreme rarity. A case of Whitley[2] seems to prove the possibility of this, and Constantin Paul[3] and Mayer[4] seem to regard it as a not very uncommon occurrence in endocarditis with a production of connective tissue and subsequent softening, but they offer little or no satisfactory proof of this.

The case reported in this paper is much more rare, and there may, perhaps, be some question whether it was really congenital and was not acquired in the attack of inflammatory rheumatism from which the patient suffered when thirteen years old, and after which he never felt so well as before. Of course the vast majority of cases of endocarditis occurring after birth affect only the left side of the heart, but there are some cases on record which seem to show that sometimes the right side is affected. Thus, Eichhorst[5] reports a case of septic ulcerative endocarditis affecting the pulmonic valves, occurring in the

1. Ueber angeborene Stenose der Arteria Pulmonalis, inaug. dissert. Berne, 1864.
2. Guy's Hospital Reports, 1857, p. 252.
3. Memoires de la Societe medicale des Hopitaux de Paris, 1871.
4. Deutsche Archiv. f. Klin. Medecin XXIV, p. 435.
5. Charite-Annalen, 1875, Berlin, 1877. II, S. 240.

puerperium of a woman, aged 28 years, previously healthy, although no murmur was heard over the cardiac region during life, not even just before death. Clark[1] also describes a case in which there was contracted right conus arteriosus, a destruction of the pulmonary valves, and their remnants were covered with fresh vegetations which on examination were found to consist of almost pure cultures of streptococci occurring in a woman 21 years old, who complained on entrance into the hospital of pain in the præcordia, dyspnœa, fever, rigors, and who presented a well-marked systolic murmur and thrill in the pulmonary area. Both of these cases were cases of septic endocarditis, and thus differed widely from our case, and the contracted conus arteriosus in the second case makes it probable that the septic endocarditis in this case attacked valves previously congenitally diseased. Coupland[2] reports a case of thickening of the pulmonary valves in an old man of 75 years, with great aneurismal dilatation of the pulmonary artery, both lesions being evidently secondary to emphysema. Finally, Schwalbe,[3] in a very valuable paper, reports one case of malignant, ulcerative endocarditis attacking the pulmonary valves and the right conus arteriosus in a woman 38 years old, two cases of retracted and thickened pulmonary valves, in old people, with obstructed pulmonary circulation, the one secondary to a fibroid pneumonia, the other to an emphysema, and a case of syphilitic gumma attacking the pulmonary valves, the pulmonary artery and the right conus arteriosus. Bischoff[4] and Constantin Paul[5] think that if there is no communication between the auricles or ventricles, and if the trunk of the pulmonary artery is dilated, a stenosis of the pulmonary artery, if present, may be acquired and not congenital. But exactly this condition of the heart has been found so often in infants and children[6] that were evidently victims of congenital heart disease, that little or no importance can be attached to this statement.

From a somewhat hasty review of the literature of this subject,

1. Transactions of the Pathological Society, London, 1892-3, XLIV, p. 29.
2. Transactions of the Pathological Society, London, 1875, XXVI, p. 22.
3. Virchow's Archiv. Bd. 119 S. 271.
4. Die Erkrankungen an der Mundung der Pulmonalarterie, Berlin, 1873.
5. Memoires de la Societe Medicale des Hopitaux de Paris, 1871, p. 45.
6. Zariquiey—Revue des Maladies de l'enfance, 1894, XII, p. 620.
   Ogle—Transactions of the Pathological Society, London, 1853-4 V, p. 69.
   Peacock—Transactions of the Pathological Society, London, 1879, XXX p. 258.
   Barlow—Transactions of the Pathological Society, London, 1879. XXX, p 272.
   Finlay—Transactions of the Pathological Society, London, 1879, XXX, p. 262.
   Lucas—Transactions of the Pathological Society, London, 1879, XXX, p. 26.

therefore, I can find only these three cases of malignant ulcerative endocarditis in woman and these three cases of thickened and retracted valves in old people with obstruction in the pulmonary circulation, in which the pulmonary valves were the seat of an endocarditis after birth. None of these six cases bear any resemblance to the case that I have reported above. On the other hand, many cases are on record quite similar to this one of mine which were undoubtedly congenital; and the fact that our patient was a delicate child and could not walk till he was five years old, and then had to wear braces for five or six years, points to some congenital weakness.

Formerly the belief was common that many of these cases of pulmonary stenosis were acquired after birth; and Rosenstein [1] reports a case very similar to mine which he regards as acquired, notwithstanding the fact that his patient had from early childhood exhibited signs of dyspnœa and cyanosis. At the present time, however, there seems to be a great unanimity of opinion among observers of diseases of children that lesions of the pulmonary valves are always congenital. Thus Cheadle in *Keating's Cyclopædia of the Diseases of Children*, Vol. II, p. 773, states that: "The pulmonary valves invariably escape endocarditis;" and again, on p. 782: "A pulmonary murmur is never organic unless of congenital origin and affords, therefore, no evidence of endocarditis." This seems, also, to be the view of Sansom, who, a few pages later in the same volume of the same cyclopædia, in describing the valvular lesions acquired in childhood, makes no mention of any lesion of the pulmonary valves, although describing the lesions of the mitral, aortic and tricuspid valves.

Admitting that the lesion in this case was congenital, there still remains the question whether it was due to a faulty development or was the result of a fœtal endocarditis. There was no trace in the smooth diaphragm of any irregular thickening nor along its edge any vegetations to bear witness to an old endocarditis. On the other hand, occurring as it did early in fœtal life, when the reparative power of the tissue was at its height, it is quite possible that all the irregular thickenings of the recent endocarditis may have disappeared in the time of twenty-seven years (as a rough, uneven scar in time becomes smooth); while the fact that the diaphragm was not a uniform membrane, but showed distinctly that it was composed of three distinct valves with their respective sinuses of Valsalva, and

1. Ziemssen's Cyclopædia — American translation, Vol. VI, p. 155.

the fact that the ventricular surface of this diaphragm was continued down along the conus arteriosus as a greatly thickened endocardium, both point strongly to an old inflammatory endocarditis.

Orth [1] discusses the congenital diseases of the heart in general and pulmonary stenosis in special at great length. He follows Lindes and Rokitansky in laying great weight on abnormalities of the septum which in early fœtal life divides the common arterial trunk into the pulmonary artery and the aorta as giving the key to the nature of the lesion, and he sums up a careful study of the question in the following table in which the cases caused by fœtal endocarditis are comprised in class I, while those due to faulty development are comprised in class II:

Primary contraction of the pulmonary artery.

I. With normal development of the septum trunci arteriosi communis (the septum which in early fœtal life divides the common arterial trunk into the pulmonary artery and the aorta.)
   1. Inflammatory stenosis of the pulmonary orifice; the interventricular septum being closed and the foramen ovale open.
   2. Inflammatory and muscular stenosis of the conus arteriosus; the interventricular septum being closed and the foramen ovale open.

II. With abnormal development of the septum trunci arteriosi communis.
   1. Narrowing of the pulmonary arterial trunk without defect in the interventricular septum with open foramen ovale and with *abnormal situation of the septum trunci arteriosi communis* (the septum being formed too far towards the left and cutting off too small a pulmonary artery).
   2. Narrowing of the conus arteriosus with defect in the interventricular septum with foramen ovale either open or closed, and with *an abnormal direction of the septum trunci arteriosi communis* (the septum dividing the pulmonary artery and aorta evenly enough, but instead of growing from posterior left to anterior right, it grows more directly postero-anteriorly, so that the aorta is formed too much to the right and

1. Lehrbuch der speciellen pathologischen anatomie, Bd. I., S. 151, 157.

too much to the front. On that account the interventricular septum is unable to reach the right wall of the aorta and unite with it, but remains open and the aorta is not cut off completely from the right ventricle).

3. Narrowing both of the pulmonary arterial trunk and of the conus arteriosus with defect in the interventricular septum, with the foramen ovale either open or closed and with both an abnormal situation and an abnormal direction of the septum trunci arteriosi communis.

Inasmuch as there was no communication between the ventricles in this case, and the pulmonary artery was not contracted, but rather larger than normal, it is evident that it belongs in class I, and consists of a combination of both of the subdivisions. The stenosis is therefore of inflammatory origin, and the case one of fœtal endocarditis. That the foramen ovale is not more widely open is due to the moderate degree of the pulmonic stenosis; for the opening in the diaphragm was sufficiently large to allow of the passage of a considerable amount of blood during the systole.

There is no evidence to show that the valvular lesion in this case was made worse in any degree by the attack of rheumatism, for the thickened adherent valves with their circular or slit-like opening, and the contracted conus arteriosus, are the usual appearances met with in congenital pulmonary stenosis, and there are no warty excresences nor irregular thickening on the valves remaining as evidence of an old endocarditis. Whether the ductus arteriosus was patent, as it sometimes is, we cannot positively say, although from the age of the patient and the slight cyanosis except after exertion, it is not probable that it was. There certainly was no communication between the ventricles, and the slight opening in the foramen ovale so frequently found in otherwise normal hearts was probably of no import.

It is doubtless on account of the uncomplicated nature of this lesion that the patient lived as long as he did ; for, although his life was one of hardships and neglect, he attained an age very unusual even for pulmonary stenosis, which is the only form of congenital heart disease in which it is common for patients suffering from it to reach the age of puberty. As far as his heart lesion went, the patient might have lived much longer, but his death was due to the

exhaustion incident to the tuberculosis of the lungs and larynx and to his inability to take food on account of his laryngeal tuberculosis. That he died of tuberculosis is in accord with the statement of Samuel[1] that "in cases of pulmonary stenosis there is a pronounced tendency to pulmonary tuberculosis." This tendency of patients suffering from pulmonary stenosis to contract pulmonary tuberculosis has long been known. Peacock[2] reports a case almost identical with this one which died of pulmonary tuberculosis, and Constantin Paul[3] has collected thirteen cases of pulmonary stenosis complicated by pulmonary tuberculosis, and states that Norman Cheevers, and especially Lebert, had previously pointed out the same fact.

The hemorrhages from which the patient suffered came at times from ulcerated processes in his nose, at times from those in his lungs.

The symptoms present in this case — the cyanosis, the clubbed fingers, the thickened lips, the dyspnœa, the horizontally enlarged area of cardiac dullness and the blowing systolic murmur — were those usually found in pulmonary stenosis. The murmur, however, presented some noteworthy characteristics, the most striking of which was that it was heard loudest at the lower part of the sternum. On repeated examinations the murmur was always heard louder at the lower part than at the middle or upper part of the sternum, so much so as to suggest the existence of a tricuspid insufficiency, were it not that the absence of a venous pulse made this improbable. There seem to me to be two possible explanations of the low situation of this murmur. One of these possible explanations is that the funnel-shaped depression of the lower part of the sternum brought it in closer contact with the heart, and hence caused the murmur to be better heard at that point. The other is that the conus arteriosus was so much contracted that the murmur was produced rather at the commencement of the conus than at the pulmonary orifice, and, consequently, was heard lower down than usual. In support of this latter view may be cited the case of Kronig[4] in which the murmur was heard loudest over the lower part of the sternum, and at the autopsy a contraction of the conus arteriosus was found; the pulmonary valves being normal. It is possible that both of these conditions may have been factors in causing the murmur to be heard

1. Eulenburg, Real Encyclopædie der Gesammten Heilkunde, Bd. IV, S. 623.
2. Transactions of the Pathological Society, London, 1858-9. X. p. 107.
3. Memoires de la Societie medicale des Hopitaux de Paris 1871, p. 45.
4. Berliner Klinische Wochenschrift, 1887, No. 51.

loudest over the lower part of the sternum. The murmur heard beneath both clavicles was probably due to the transmission of the stenotic murmur into the pulmonary artery of each lung.

No diastolic murmur was ever detected, and although the valves looked as though they might allow of regurgitation, yet in flapping back the sides of the opening in the valve probably came in contact and rendered the valve fairly competent, and what regurgitation did take place was not sufficient to give rise to a murmur. The case, then, was practically one of uncomplicated pulmonary stenosis living to the age of twenty-seven years, and on account of its rarity I have ventured to report it at some length.

149 WASHINGTON AVENUE.

MITRAL STENOSIS.*

BY HERMON C. GORDINIER, M. D.,

Professor of Physiology, Albany Medical College.

GENTLEMEN: — The two patients who have consented to come before you this evening for examination present typical physical evidences of mitral stenosis. Before proceeding with the examination I will briefly call your attention to the clinical history of that affection.

The auriculo-ventricular opening guarded by the mitral valve measures about four inches in circumference, is oval, and will permit the passage of three fingers. When stenosis or obstruction of this valve or orifice occurs, it is in all but a few instances dependent on a former endocarditis localized at the mitral orifice and adjoining endocardium. This inflammatory process extends to the valve flaps and chordæ tendineæ, and results in thickening and contraction of the latter, as well as of the papillary muscles connecting the leaflets of the mitral valve with the columnæ carneæ. The leaflets of the valve and chordæ tendineæ are often welded together by an exudation, becoming firm, hard and indurated, and have cartilaginous feeling. Calcareous deposits are apt to form on the valvular flaps that have undergone the sclerotic change. When the chordæ tendineæ and valve flaps have become adherent, the edges of the valve are drawn toward the center of the cavity of the left ventricle or toward the apex, the rest of the valve being adherent upwards to the auriculo-

*Read before the meeting of the Doctor's Club, Troy, N, Y., December 29, 1896.

ventricular orifice, forming a funnel-shaped opening, the base being toward the auricle, the apex in the ventricle.

A circular ring-like stenosis often occurs, the result of thickening and narrowing of the fibrous ring which surrounds the auriculo-ventricular opening. It frequently happens that marked calcareous changes occur at the basal portions of the valve flaps, producing a chink for the mitral direct current to pass, thus forming the so-called button-hole mitral orifice. The following changes in the heart occur as a result of mitral stenosis: foremost a dilatation with hypertrophy of the left auricle; the dilatation usually predominates. The left auricle is often dilated to an enormous size, sometimes to such an extent that a small tangerine orange could be placed into its cavity. The auricular walls vary from 1-8 to 1-6 of an inch in thickness. The left ventricular chamber usually has its normal capacity; if, however, the stenosis be extreme, it may be a little undersized. The outflow from the pulmonary veins is greatly retarded by the over-distended auricle, with, as a result, engorgement of the pulmonary artery and its subdivisions. The latter condition brings an increase of pressure upon the right ventricle, which becomes enlarged by hypertrophic dilatation, and, consequently, for a long or short time it is competent to perform the increased work. After a time the right ventricle again becomes incompetent, following which come the changes of ruptured compensation, such as partial or complete anasarca, general venous stasis and cyanosis.

Symptoms.—Prior to ruptured compensation the subjective symptoms are few. The individual may complain of uneasiness about the heart, palpitation, headaches or perhaps a cough, which latter may be troublesome, it being a constant dry hack, occurring mostly at night. He may have vague pains and uneasy sensations about the chest. Most of them complain particularly in winter of cold extremities. Active exertion, such as ascending stairs or going up a little elevation, causes dyspnoea and he is often compelled to make frequent stops in order to breathe. When ruptured compensation occurs, *i. e.*, a giving way of the right ventricular wall, there is a constant distress from cough and difficult breathing, due to pulmonary congestion or œdema. Bronchial hemorrhage is of more frequent occurrence with mitral stenosis than with any other valvular defect. It is usually induced by violent exercise. Sudden attacks of pulmonary œdema are quite frequent,—when the right heart is dilated and has not been toned and regulated by heart tonics. These

attacks are distressing to behold. The patient is in a position of extreme orthopnœa, with a distressed and anxious look, generally cyanotic, with great beads of perspiration on his forehead, his hands on his knees and panting like a broken-winded horse, feeling that every moment is his last. Then, if not relieved by timely aid, he may cough up a pint or more of frothy blood-stained serum, is relieved and falls asleep exhausted. If this relief of nature does not occur, death from apnœa ensues, the patient actually drowning in his own secretions. The patient may pass but a few ounces of urine daily from lack of tension in the arterioles.

Physical Signs.—The subjective symptoms are insufficient to permit the clinician to make more than a sheer guess as to the character of the lesion present, and he is dependent exclusively on certain physical signs which are almost pathognomonic.

Inspection.—In pure cases of mitral stenosis the apex is in its normal position ; if not found in its normal position, mitral regurgitation or aortic valve disease is usually found associated with it, and possibly other extraneous causes, such as adherent pericardium, Bright's disease, general arteriosclerosis may be present. The apex beat is usually vibratile, not punctuate, as in health ; if the left auricle be greatly dilated, a pulsation of it may be observed in the third or fourth left interspace. Epigastric pulsation is present due to the enlarged right ventricle. I have noticed a marked degree of pallor in many cases of mitral stenosis. In children a bulging of the lower precordial and epigastric regions is often seen.

Palpation.—The location of the apex may be determined; in most instances one feels in addition a thrill or tremor, fine and vibratile, commencing with the contraction of the left auricle, and stopping abruptly with the impulse of the apex against the chest wall. It is therefore presystolic in time. It is very characteristic of this lesion, and is in all but a few cases of the same peculiar character. It is strictly localized at or within the apex, is never transmitted to the left in the axilla, but when transmitted at all is toward the zyphoid cartilage. This presystolic thrill is regarded by the best authorities abroad, as well as in this country, as diagnostic of mitral stenosis, and most of them maintain that if anyone be familiar with its exact character he may diagnose mitral obstruction by palpation alone. In a few rare cases this thrill is absent. A very ingenious theory as to its mode of production is given by Prof. Gairdner, of Glasgow, who was one of the first to direct the pro-

fession aright in regard to the diagnosis of this condition. It is as follows: The left ventricle during its diastole is becoming gradually distended by low pressure from the moment of systole and closure of the semi-lunar valves; just before the systole the apex being the most dependent part of the ventricle, is filled or partially filled with blood, and when the left auricle contracts and sends the last portion of blood into the ventricle through the narrow and irregular orifice, it sets the blood into vibrations, which vibrations are readily rendered sensible to the touch. The pulse is rapid, small, easily compressible and late in the case very irregular. Percussion shows an increased area of cardiac dullness to the right and left of the sternal border, often reaching as high as the second or third ribs.

Auscultation.—The mitral direct current of blood passing through an irregularly contracted canal into a partially distended ventricle produces vibration of the tips of the mitral flaps, and thus causes the characteristic murmur. This murmur like the thrill has its point of maximum intensity at or just above and internal to the apex, an area that in most cases could be covered by a silver dollar, and is rarely transmitted except toward the xiphoid cartilage. In a few cases it may be heard in the third and fourth intercostal spaces. In a patient now under my care with mitral stenosis, the presystolic murmur can be well heard at the angle of the left scapula. Doctor Janeway long ago called attention to similar cases. The quality of this murmur was described by the late Professor Austin Flint as blubbering, rolling, or churning. This quality is usually constant and is very characteristic. It is beautifully brought out, when as is often the case, mitral regurgitation is associated with the stenosis, the blubbering, churning, or rasping quality of the presystolic murmur ending abruptly with the first sound to be followed by the systolic mitral regurgitant murmur which is generally soft in quality. This murmur may be imitated by permitting the tongue and lips to vibrate in expiration while whispering double "r." The murmur occurs just prior to the first sound and ceases with remarkable abruptness at the inception of the systole of the left ventricle. The murmur should always be timed by the apex beat or by the carotid pulse. The first sound in this condition is frequently short, sharp, and valvular, resembling the second sound. This condition of the first sound is so frequent that beginners often consider the murmur systolic, beginning, as they believe, just before the second sound. If this little point be remembered and the murmur timed by the apex beat or by the pulse of the carotid artery, there will seldom be

any dispute as to the time of its occurrence. The reason the first sound is so short and valvular is because it loses largely the element of impact and blood friction. The late Professor Fagge stated : "I do not find in any of my notes the record of a single case in which the murmur was soft and musical."

"The probable explanation of the loudness of the murmur," says Doctor Gairdner, "is that during the diastole of the ventricle, the columnæ carneæ, being relaxed and the thickened curtains of the mitral valve not being made tense and dragged upon by chordæ tendineæ are thrown into vibrations llke a flag flapping to and fro in the wind."

This murmur is sometimes so short that it resembles a mere tone. It is no uncommon thing to discover mitral stenosis at the autopsy table undiagnosticated because of the lack of the typical physical signs. The pulmonic second sound at the base is always accentuated, and, according to Bramwell, the amount of accentuation is a guide to the degree of stenosis. Reduplication of the second sound at the base is often present and should always make one suspicious of mitral stenosis. It is supposed to be due to a want of synchronism in the closure of the semi-lunar valves. The designation of this murmur is objected to by a few clinicians who consider it systolic, from the fact, they say, that the left auricle has not sufficient power to generate a murmur of its quality. In reply to this argument one may refer to the production of a *bruit de diable* in the veins of the neck and show that for the causation of a loud murmur very little is requisite. It has also been objected to on the grounds that the left auricle, being less capacious and very much weaker than the left ventricle, could not generate a murmur more intense than a mitral regurgitant. To this objection the reply is, that the intensity of a murmur depends not solely upon the force of the blood stream, but mainly upon the character, size and shape of the canal or orifice through which the blood stream must pass. This murmur is never due to anæmia and is always organic in its nature. If not dependent upon mitral stenosis, it is due, as was first made known by Doctor Austin Flint, Sr., to aortic regurgitation. In two cases of aortic regurgitation that have been under my charge, with a murmur at the apex, presystolic in time, I have observed, that the murmur, while resembling the typical one of mitral stenosis, was not so rolling in quality, the pulmonic second sound was not nearlyso accentuated, and the thrill was rather indefinite and not characteristic.

89 FOURTH STREET, TROY.

For the ANNALS.

A FEW POINTS RELATING TO AORTIC REGURGITATION.

BY WILLIAM L. RUSSELL, M. D.

Late Instructor in Physical Diagnosis, New York Polyclinic.

Few chronic conditions of equal gravity are so amenable to treatment as valvular diseases of the heart. When compensation is perfect, no treatment should, of course, be instituted, further than to instruct and guide the patient in the mode of life necessary to preserve it, impressing upon him especially that its greatest foes are intemperance, malnutrition, over-exertion, and mental worry. If, in addition, the first signs of failing compensation be met with appropriate measures, life and a fair degree of activity may be maintained for many years, and sometimes far into old age. Restoration from serious and even desperate conditions is likewise possible, and may be followed by years of active life. Much depends, however, upon the lesion present, and to none do the remarks just made apply less than to aortic regurgitation. This lesion may, to be sure, remain quiescent for years, but compensation fails sooner than with others, and with its failure the beginning of the end is at hand. Not only in prognosis, but in causation, symptoms, and treatment, certain peculiarities pertain to it that constitute it a special object for study. Some of these are illustrated by the following cases:

P. G., male, aged 42, a baker, born in Germany; came under observation on December 31, 1892.

He stated that he had, until his present illness, been exceptionally healthy all his life. He had no knowledge of ever having had an acute infectious disease, rheumatism, or syphilis. He had worked very hard, however, and had drank beer very freely for years, thus providing conditions which seem to produce this lesion more frequently than any other of the usual causes of heart disease. His family record was excellent.

His present illness could be traced back for about nine months only. The first symptom was dyspnœa, which had gradually increased. He had lost thirty pounds in weight, and had had two or three attacks suggesting angina. The last of these occurred a few hours before he consulted me, and was accompanied by cardiac pain, faintness and sweating. It lasted four hours. His appearance was that of a robust man who had become obese. His countenance was anxious, his skin pallid, cool and moist, especially that of the hands and feet, the latter of which were slightly œdematous. He was breathing rapidly and had a slight cough. His pulse was soft, relapsing, intermittent. There were marked pulsations in the brachial and larger superficial arteries; no capillary pulsation.

Physical examination of the chest revealed some dulness over the lower lobes of the lungs, and moist râles. The heart was markedly enlarged. The apex, rather rounded, could be felt in the sixth interspace at the axillary line, and the area of dulness was correspondingly increased in every direction. The diffused, heaving, tumultuous impulse of an enlarged, dilated heart could not be mistaken when the hand was laid on the precordium. A soft, breezy, diastolic murmur was detected over the aortic orifice and along the sternum downwards as far as its junction with the fourth rib. The heart sounds were enfeebled.

The urine was scanty, and contained abundant urates and a moderate amount of albumen. There were no casts. The specific gravity was 1032.

The patient was directed to stop working, and the use of alcohol; to remain in a position as near recumbent as could be assumed because of orthopnœa; to eat four small meals daily, his diet being varied, but never to consist wholly or largely of soup or other liquids, or of starchy or saccharine substances. Salines were given for three successive mornings to relieve the portal circulation. The only other medication was Fluid Extract of Digitalis (Squibb), three minims, three times daily for five successive days, after which an interval of three days was allowed before it was begun again. At the end of three weeks there was marked improvement. The signs of congestion of lungs, liver and kidneys had disappeared. There was no longer œdema of the feet. There had been no other angina-like attack, and the heart sounds were clearer, more regular, and less frequent. He felt so much better that he resumed his occupation, careful directions being given as to the avoidance of great exertion, and resting in the recumbent position at every opportunity. He was given full doses of tincture of nux vomica, and iron. He complained now of little except dyspnœa, and although he lost weight, he gained in vigor and in general appearance. His dietary was made a matter of constant attention, so as to avoid digestive disturbance and distension of the stomach. Whenever dyspnœa showed a tendency to increase, digitalis was given and continued until the effect was secured. This was generally within a few days, and five minims four times daily was the largest dose required. It was discontinued as soon as possible. Salines were given occasionally, and always with good effect.

During the hot weather of summer his condition became aggravated. There was orthopnœa, requiring small doses of morphine for its relief, and there were blood-stained expectoration and scanty, albuminous urine. He had attacks of palpitation, when the heart beat so rapidly as to be scarcely countable, but had little pain, and no faintness nor sweating as formerly. He discontinued working for two months, and rested and exercised methodically as directed. His symptoms were now reduced to a minimum, and he resumed work under easier conditions. He required little treatment during the winter, except the general and dietary precautions already referred to. His only suffering was from dyspnœa, and he became very despondent and talked of suicide.

On March 19, 1894, while visiting a friend, he became dizzy, and noticed loss of strength in his right hand. He came home alone, but gradually grew worse. The paralysis increased, and in three days involved the whole of the right side, and he was helpless in bed. He became also slightly aphasic

(motor only), but was at no time unconscious, nor even stuporous. He remained in bed or in a large chair for four months, gradually recovering the partial use of his leg, and eventually walking about laboriously. During all this time and for five months afterwards, during which he was able to walk up and down stairs and for a short distance outdoors, there were no cardiac symptoms requiring treatment. The prolonged rest had restored compensation sufficiently to meet all the demands of his present easy life. His general health had deteriorated somewhat, however, and his mind had become enfeebled. During the following winter the mental worry and a little extra exertion connected with changing his residence resulted in a return of the heart symptoms in aggravated form. At no time, however, was he dropsical to any greater extent than a slight œdema of the feet and the paralyzed limbs. The old treatment was resorted to, but with little effect. The quantity of digitalis given was gradually increased until December 7th, when he had an attack of syncope which lasted five minutes, and the drug was discontinued. Strophanthus was tried instead, but without effect, and the digitalis was again resorted to, the precaution being taken to keep him lying down when under its influence. He had, however, a second attack of fainting on December 29th, when rising in bed, and it was found necessary to limit the amount of digitalis, and o give it at intervals only. Treatment seemed now unavailing, and, with occasional periods of slight improvement, he gradually sank, and died in March, 1895.

This case illustrates well the absence of marked dropsy, the presence of cardiac pain, and the mental disturbance; conditions most frequently seen with this lesion. The value of rest in the treatment of failing compensation was also thoroughly demonstrated, as well as the possibility, by careful management, of keeping such a patient in a condition which would allow of his supporting his family for a year after marked signs of failure had appeared. One of the most important features of the treatment was, of course, the use of digitalis, although it is to some extent contraindicated in this lesion. There is danger, as was seen, of syncope from the prolonged reflux due to the lengthened diastole, but a great deal was accomplished in this case by small doses at safe intervals.

The next case is somewhat different.

M. L., female, aged 60, widow, native of U. S.; came under observation September 5th, 1893.

She stated that she had had one attack of acute articular rheumatism twelve years before, but had otherwise always been in good health. She had, however, worked very hard as a child's nurse for years. Her habits were good, and her family history negative. She was led to seek medical advice because of dyspnœa, which had appeared nine or ten months before, and of attacks of palpitation and cardiac pain, to which she had been subject for five months.

These attacks were more frequent and severe after excitement. On rising in the morning she had frequently pain in the cardiac region, the shoulder and left arm. She sometimes vomited during the attack. She was usually relieved on eating breakfast. She complained also of throbbing over her whole body, and of restlessness and irritability.

She was spare, and wiry in appearance. Her face expressed anxiety, but was markedly flushed, and her eyes were bright and injected. Her veins seemed overfull, but there was no œdema. Her pulse was rapid but regular, relapsing, and the artery was tense and slightly thickened. A suggestion of thrill was perceptible in the radial, and this was pronounced in the brachial and subclavian arteries. Pulsations were visible in the same arteries and in the carotids. There was also capillary pulsation.

The lungs were found to be normal, but the heart was much enlarged. The apex was pointed, and could be felt two and a half inches to the left of the nipple line. The heart-beat was forcible and rapid. A loud, blowing, double, or steam-tug murmur could be heard most distinctly at the second interspace to the right of the sternum, and was conveyed in every direction. Above the clavicle, however, but one murmur, the systolic, could be heard. The urine was normal.

The cardiac muscle seemed to be sufficiently strong in this case, and digitalis was not indicated. In fact, one of the chief sources of discomfort was the forcible beating of the heart. The arterial degeneration noted rendered it probable that the coronaries were already involved. Various remedies were tried, but with little relief, except in the case of nitroglycerine, which apparently shortened the attacks of pain, and of small doses of tincture of aconite, which relieved the throbbing to some extent. Bromides and valerian had no effect on the nervous excitement, and nothing but a small dose of morphine, occasionally, enabled her to sleep. At the end of six months there was but little change in her condition, and she was then lost sight of.

In the third case the innervation of the heart seemed to be profoundly affected.

P. H., male, aged 27, a clerk, born in Ireland; came under observation in February, 1894.

He stated that he had had one severe attack of acute articular rheumatism two years before, and, with the exception of gonorrhœa, had had no other illness. He had always been a free and steady drinker, but did not consider that he had committed any excesses. He was also a great smoker. He had been married a year. His family history was negative, except that one brother had died of tuberculosis.

He was led to seek medical advice because of dyspnœa, which had been present for two or three weeks. He had also suffered from palpitation on exertion since the attack of rheumatism.

He was spare, of neurotic type, pallid, and weak-looking. His extremities were cool, and his face slightly dusky. There was no œdema. His pulse was weak, soft, relapsing, and its rate a hundred and ten. There were visible pulsations in all the superficial arteries, but no capillary pulsation.

His lungs were normal, though he had a slight cough. The heart was enlarged. The apex was pointed, and could be felt in the sixth interspace one and a half inches to the left of the nipple line. A pulsation noted in the third interspace to the left of the sternum indicated an enlarged right ventricle. A diastolic murmur was detected most distinctly in the third interspace to the left of the sternum, and was conveyed downwards. It obscured the second cardiac sound at the base completely.

It can hardly be said that treatment influenced this case to any extent. Digitalis was tried, but seemed to have little effect, and to cause vomiting. It was difficult to control the patient's habits, and to keep him in bed. Nourishment was given at short intervals in small quantities, and dyspnœa was in some measure controlled and sleep secured by small doses of morphine. Strychnine and strophanthus were also employed, and his portal circulation relieved by means of salines. He improved temporarily at intervals, but his heart grew more rapid and feeble, and he expectorated blood-stained sputa. Dyspnœa was not excessive, however, and there was but slight œdema of the feet and ankles. He did not seem to suffer markedly, and died on April 20th somewhat suddenly in his chair, shortly after sitting up.

These three cases are sufficiently suggestive of the peculiar features and comparative hopelessness of this lesion; of the relation of heart-strain and the use of alcohol to its causation; of these again, with the use of tobacco, to its prognosis; and of the desirability of special study directed to its causation, course, and management.

BAY SHORE, LONG ISLAND, N.Y.

THE CORRECTION OF DEPRESSED AND SADDLEBACK DEFORMITIES OF THE NOSE BY OPERATIONS PERFORMED SUBCUTANEOUSLY, WITHOUT THE AID OF METALLIC OR OTHER ARTIFICIAL SUPPORTS.*

BY JOHN O. ROE, M. D.

Rochester, N. Y.

After referring to two original operations that he had devised and described to this society, one of them ten years ago, for the correction of the deformity termed pug-nose, and another in 1891 for the relief of angular deformities of the nose, Dr. Roe proceeded to describe his new method for the correction of saddleback and depressed noses. This procedure is, however, applicable only to the correction of the deformities in which the nasal septum is present, thereby affording support for the tissues that are transplanted for the correction of the deformity. In those cases where there is an entire

*An abstract of a paper read before the Medical Society of the State of New York, Jan. 26, 1897.

absence of this internal support, as we so often find as the result of syphilis, we must resort to some metallic or other artificial support.

Depressed noses may be divided according to their cause into two classes, viz., idiopathic and traumatic.

1. The idiopathic variety comprises those noses in which the deformity is due to a lack of development of some portion of the nose. When there is a lack of development of the central portion or the bridge of the nose and an excessive development of the tissues of the end of the nose, we have an exaggerated "le nez retrousse," or pug-nose, termed the saddleback nose. When there is a lack of development of the cartilaginous portion of the nose, we have the flat or frog nose.

2. The traumatic variety includes those cases in which the deformity is the result of injuries from external violence, causing fracture and displacement of the parts.

The deformities that result from abscess of the nasal septum, in which there is a destruction of the sesamoid cartilages which support the central portion of the nose, giving it the appearance of having been struck over the bridge with a small round or angular body, a poker for instance, are also to be classed in this variety.

Dr. Roe then pointed out that the beauty of the nose depends almost entirely upon its symmetry, so long as the disproportionate relations between the size of the nose and the size of the face is not too great. The causes and conditions of depressed and saddleback noses are so various that the operations required for the correction of these deformities must be equally varied. No two cases will be found exactly alike and require the same operation, although the general principle underlying these operations remains practically the same.

Several cases illustrating the different forms of saddleback and depressed noses and the special subcutaneous methods employed for their correction were then detailed, and illustrated by enlarged photographs taken of the patient before and after the operations were performed.

There are three conditions which must be observed in order to insure success in these operations. First, the utmost antiseptic and aseptic precautions must be taken to guard against any possibility of suppuration in the wound. Second, the plan of operation must be carefully studied in order that the tissues at our disposal may be utilized to the best advantage. Third, care and attention subsequent to the operation, which are as important as the operation

itself, for no matter how well directed the operation may be, complete success will not attend it without the most careful subsequent attention.

"These operations on the nose, therefore, are not attended with the brilliant results of other operations, where the parts are maintained aseptic until healed or until union has taken place, and the object of the operation is attained. In these operations, on the contrary, the parts cannot be dressed with an aseptic bandage and left to themselves to heal. They must not only be held in place by retentive appliances, but the shape of the form must often be changed from day to day, as the swelling subsides. It may be necessary to add a little internal or external pressure here and remove a little there, until fixation of the tissue is complete. Frequently the principal or main operation is supplemented by minor operations for the correction of slight defects. An unduly prominent point may require lowering, a depressed portion may require raising, and so on until the work is completed. We might say in these cases that eternal vigilance is the price of a perfect result and a perfect nose.

28 NORTH CLINTON ST., ROCHESTER, N. Y.

PUERPERAL ECLAMPSIA; ITS ETIOLOGY AND TREATMENT.*

BY WILLIAM WARREN POTTER, M. D.,
Buffalo, N. Y.

Dr. Potter said, *inter alia*, that we seem to have arrived at the renaissance of eclamptic literature, that while the subject is being discussed in magazine articles and societies it would not answer for this society to keep silent.

Though the pathogenesis of eclampsia is still unsettled, we are certain that it is a condition *sui generis*, pertaining only to the puerperal state, and that to describe, as formerly, three varieties — hysterical, epileptic and apoplectic — is erroneous as to pathology and causation as well as misleading in treatment.

The kidney plays an important office in the economy of the eclamptic. If it fails to eliminate toxins, symptoms are promptly presented in the pregnant woman. Renal insufficiency is a usual accompaniment of the eclamptic state. Overproduction of toxins

*Abstract of a paper read before the Medical Society of the State of New York, Jan. 26, 1897.

and under-elimination by the kidney is a short route to an eclamptic seizure. However, many women with albuminuria escape eclampsia, and many eclamptics fail to exhibit albuminous urine.

The microbic theory of eclampsia has not yet been demonstrated. The toxemic theory, in the present state of our knowledge, furnishes the best working hypothesis for prevention or cure.

Treatment should be classified into (*a*) preventive, and (*b*) curative. The preventive treatment should be subdivided into medicinal and hygienic; and the curative into medicinal and obstetric. A qualitative and quantitative analysis of the urine must be made at the onset. If there is defective elimination something must be done speedily to correct a faulty relationship between nutrition and excretion. One of the surest ways to control progressive toxemia is to place the woman upon an exclusive milk diet. This will also serve to flush the kidneys and thus favor elimination. Distilled water is one of the best diuretics; it increases activity and supplies material — two important elements. In the pre-eclamptic state, when there is a full pulse with tendency to cyanosis, one good full bleeding may be permissible, but its repetition should be regarded with suspicion. If there is high arterial tension — vasomotor spasm — glonoin in full doses is valuable.

When eclampsia is fully established the first indication is to control the convulsions. Full chloroform anæsthesia may serve a good purpose. If the convulsions are not promptly controlled, the uterus must be speedily emptied. This constitutes the most important method of dealing with eclampsia. Two lives are at stake, and by addressing ourselves assiduously to speedy delivery of the fœtus we contribute in the largest manner to the conservation of both.

Rapid dilatation, first with steel dilators, if need be, then with manual stretching of the os and cervix, followed by the forceps, is the nearest approach to idealism. Only rarely can the deep incision of Duhrssen be required. Cæsarean section should be reserved for extreme complications, as deformed pelvis, or to preserve the fœtus when the mother's condition is hopeless. Veratrum viride is dangerous, uncertain and deceptive in action.

In eclampsia of pregnancy, *i. e.*, prior to term, the aseptic bougie, introduced to the fundus and coiled within the vagina, may be employed to induce labor. Finally, to promote the elimination of toxic material, diuresis, catharsis, and diaphoresis should not be forgotten; neither should the hot-air bath, nor the hot pack be overlooked.

Editorials.

The New York State Medical Society.

In recent years no meeting of this society has been more satisfactory in scientific results than the one just held. The program contained thirty-five individual papers and three discussions, consisting of twenty-four separate papers, a total of fifty-nine communications. The proper consideration of such a number of papers is certainly impossible, and it is probable that the practical results would be improved by curtailing the number. At present the reader of a paper is no more than fairly launched upon his subject when he must stop. Of course, the discussion upon a paper thus amputated must, of necessity, be almost valueless, as the opinions of the author cannot be completely expressed. It would seem, however, that writers upon medical subjects ought to be able to present in the time allotted to them succinct papers upon facts or theories without the useless and often wearying introductions. For strictly scientific papers, such as that of Dr. Woods Hutchinson, more time certainly should be allowed.

The obstetrical discussion covered the subjects of puerperal eclampsia and pregnancy complicated by fibroid tumors of the uterus. In the excellent paper by Dr. Potter, an abstract of which is presented upon another page, the conclusion is reached that immediate delivery is the only reliable treatment in eclampsia. This was the general consensus of opinion. Abdominal section seemed to be the favorite procedure in pregnancy complicated by fibroid tumors, and the advantages of the removal of the entire organ were emphasized.

The evening meeting at the Bender Hygienic Laboratory revealed the marvelous strides of modern scientific progress. Scarcely more than a year ago Roentgen made known his discovery at Würzburg, and at this meeting of the society a display of two hundred beautiful illustrations of the practical value of the Roentgen rays was shown by Dr. Morton, of New York. The stereopticon views by Dr. Sayre were a splendid illustration of the way in which well-selected pictures can be made to tell their own story.

The discussion upon impure drinking water was most complete and exceedingly valuable. This subject, about which the public has been foolishly careless, and the authorities often criminally negligent, cannot receive too much consideration. The ANNALS in

its next issue will print in full all these papers, together with the complete discussion.

It would seem as if the discussion of subjects which concerned the general public weal were peculiarly appropriate for a State medical society, while those relating to what might, in contradistinction be denominated private medicine, could be more satisfactorily discussed at sectional meetings. A subject which has not apparently received sufficient consideration at the meetings of the Medical Society is medical legislation. The entire afternoon of the second day could, with great profit, be devoted to this subject. Individual bills could be assigned to members for consideration, and other members appointed to discuss them. The legislators, and especially those upon committees dealing with medical subjects, could be invited to be present and take part in the discussion. Thus in one afternoon a mighty influence could be properly exerted upon legislation. Although the present committee upon legislation does its work well and presents a very complete report, much is necessarily overlooked or indefinitely postponed in the hurry of the society.

At the annual banquet of the society, Dr. J. M. Matthews, President of the State Board of Health of Kentucky, in response to the toast "Sister Societies," announced that recent legislation in his State had freed the State completely from unqualified practitioners. The following officers were elected for the ensuing year: President, Seneca D. Powell, New York; vice-president, Lucien Howe, Buffalo; secretary, Frederic C. Curtis, Albany; treasurer, Charles H. Porter, Albany.

Insanity of Pregnancy and the Puerperal Period.

The difficulties in the way of adapting the work of the specialist to the needs of the general practitioner have long been recognized and afford a perennial subject for discussion. The temptation of the specialist to follow to the end the narrow path of some alluring investigation often renders him oblivious of the pressing demand for the practical application of discoveries already completed, and depreciates the value of his achievements. It is, consequently, a time for congratulation when he pauses for a survey of his field, and reaps from it the fruits which may be generally sought and devoured. These reflections arise after perusal of a paper by Dr. Savage on the "Prevention and Treatment of Insanity of Pregnancy and the Puerperal Period," recently presented to the Medical Society

of London. With characteristic clearness Dr. Savage points out the limits of the specialist's study of his subject and the line of observation and extent of responsibility of the obstetrician, placing plainly before him the subjects upon which his general knowledge should afford an acceptable opinion.

The classification presented is as follows:

1. Insanity of Pregnancy — (*a*) of conception; (*b*) of the first few months; (*c*) of the later months of pregnancy.
2. Insanity of Labor — (*a*) hysterical and transient; (*b*) persisting after labor.
3. Insanity associated with febrile symptoms occurring with the onset of milk.
4. Insanity following delivery within fourteen days — (*a*) septic; (*b*) non-septic.
5. Insanity coming on between the fourteenth day and six weeks after delivery.
6. Insanity of lactation or weaning.

It is impossible to differentiate a form of insanity of the puerperal period or of pregnancy, and Dr. Savage correctly draws attention to the interchange of the various symptom groups included in the classification. A woman who has suffered from one of the above named forms may suffer from any of the others, so that, having once had an attack of puerperal insanity after delivery, she is very likely to break down during pregnancy, or after weaning in a subsequent pregnancy.

The influence of heredity as a predisposing cause is emphasized, and attention is directed to the liability to puerperal insanity of women who have had attacks of insanity or have been nervously unstable at the menstrual epoch. In summing up the arguments upon ætiology, it is concluded that neurotic heredity, especially if on the mother's side, is very dangerous, but that few puerperal patients have had previous attacks of insanity, and hardly any have suffered from grave hysteria. Dr. Savage enters a vigorous protest against the opinion that marriage is a panacea for all female complaints, believing that to marry neurotic people on the chance of curing the neurosis is a very serious and unjustifiable act, whereas to condemn every hysterical girl to singleness would add greatly to the increase of insanity.

An interesting comment, which will appeal to many an experienced practitioner, refers to the possibility of a woman being able to tell

the time of conception. Dr. Savage has so often been told by women that they know at once when the pregnancy took place, by some strange feeling, or loss of feeling, as to believe in the occurrence of the symptom.

In the line of treatment, premature delivery is not advisable. In septic cases Dr. Savage has not had favorable results from the orthodox bromide and chloral treatment, but prefers other measures, such as free purgation, a thorough cleaning out of the uterus, and general measures, including the use of alcohol.

We have already written at more length than our space permits, but have been led on by the interest in the subject and by the difficulty of elision from so good a paper. There remains for annotation the valuable paragraph upon the subject of home *versus* asylum treatment, with which we close, with the hope that Dr. Savage may render further contributions of similar character, and that his example may lead other specialists to place the practical results of their labors in the hands of the general practitioner.

Dr. Savage agrees that a puerperal case should not be sent to an asylum, especially if it be her first attack of insanity, unless it is absolutely necessary. If the woman recover, believing she has only had brain fever, she may have other and normal deliveries, whereas, if she has been sent to an asylum there is no loophole for self-deception, and if again pregnant, she looks to the inevitable breaking down. There are many houses where a medical man, assisted by trained nurses, may lead his patient back to health. During treatment at home the child and husband must be got away, as must also female relations. Rest and quiet, with plenty of pure air, nourishing food and stimulants should be the principles of treatment, with some form of hypnotic which might be varied frequently. Patience is the real requirement, as the disease *cannot be cut short*, and especial care must be given during the marked period of depression or mental exhaustion, following the excitement, during which the question of permanent recovery hangs suspended in the balance.

The Contagiousness of Tuberculosis.

The order of the New York City Board of Health prohibiting spitting on the floor of public conveyances is reputed by the newspapers to be a dead letter. This, we believe, is one of those not infrequent instances in the history of public hygiene in which the average intelligence has not been sufficiently enlightened to produce

the strong public sentiment necessary to the successful operation of any law. Such a public sentiment to be effectual must, especially in the case of sanitary laws, be intelligent and the result of knowledge. Now, it is no small part of the work of physicians, not only collectively as "the profession," but individually as well, to instruct the public in matters pertaining to health.

The order referred to is, of course, directed especially against the spread of tuberculosis. Not many years ago, a suggestion that this disease could be conveyed from person to person would have been the signal for immediate controversy. This period closed with Koch's brilliant discovery in 1882. If, however, preventive measures based on this discovery are to be successfully applied, enlightenment of the public must now be effected. This can only be done by demonstrating the truth, for which we contend in terms which can be generally comprehended. The communicable nature of the acute infectious diseases is admitted without question, and a strong public sentiment supports our efforts to prevent their spread. The relation between cause and effect is here readily grasped. This is not so in the case of tuberculosis. The evidence is not so palpable, and instances to illustrate our views are not always at hand. It would be well, then, for us to remember that it was not alone the discovery of the bacillus that decided forever that tuberculosis was contagious. This was the last and completing link in a chain of evidence which had been lengthening for a century. Morgagni, who died in 1771, used to warn his pupils of the danger of the dissection of tuberculous subjects to those predisposed to phthisis. Laennec believed that a tuberculous nodule on his finger was the result of infection from a dead body, and Bayle and Louis favored the theory of contagion. Villemin proved the possibility of inoculation in 1867, and pathologists sought in vain for any other satisfactory explanation of the systematic extension of tuberculous deposits along the lymphatics, than the formation and absorption of some infective material. Accumulated experience, too, while contradictory sometimes, has tended to support the belief in contagion. Acute tuberculosis has prevailed in epidemic form in crowded English barracks on several occasions, and the nuns in certain convents have been almost exterminated by the same disease. In Louisville, a tuberculous nun was admitted to a convent, and within four months nine others had contracted the disease, four of whom died. No new cases developed after the remaining sick had been removed. A circular letter sent to all the

members of the British Medical Association brought reports of 321 cases supposed to be due to contagion, 223 of them being husbands or wives infected the one from the other. The Brompton hospital reports show that of 239 widows and widowers treated for tuberculosis, 106, or 44 per cent., had lost husband or wife of the same disease. In fact, few physicians of much experience have failed to observe similar instances. There can be little doubt, too, that much of our knowledge relating to heredity and tuberculosis will have to be reviewed, owing to failure to give due importance to the opportunities for infection among relatives. Much evidence of a similar nature to the above is available and it is the duty of every physician to become familiar with it, and to use it when needed. The average layman sees little to convince him that consumption is a communicable disease, and regards the whole matter lightly. The creation of an intelligent public sentiment, then, devolves upon us. New York is not the only place in which rules against spitting are needed. It will not be long before our very health resorts become places to be shunned by those predisposed to tuberculosis. It is stated in the *Public Health Journal* that consumption was unknown among the natives of the Riviera, when victims of the disease began to go there from other places, but that it has now become firmly established among them, the washerwomen being especially attacked.

The Tubercle Bacillus.

Although it is now about fifteen years since the discovery of the tubercle bacillus by Koch, and though doubts have been thrown upon its morphology since 1889, we still keep on calling it the "bacillus" of tuberculosis. As early as 1884 Petrone discovered in a meningeal exudate an organism which stained by the methods employed for the tubercle bacillus, but which occurred in fungus form, and at this time he regarded his discovery as being a form of the tubercle bacillus. Later on Klein, Fischel, Coppen-Jones, Metschnikoff and others described variations in the tubercle bacillus, which tended to show that it was not a bacillus at all, but more properly should be classed with some of the higher organisms, perhaps the streptothrices or the cladothrices.

We have altered the names of many important micro-organisms, as our knowledge of them grew. Why should we not alter that of the tubercle bacillus if our increase in knowledge seems to warrant the procedure?

Coppen-Jones has suggested the name Tuberculomyces, with the affix "hominis" or "avium" as necessary. Such a step in the direction of scientific accuracy could hardly be a mistake.

Medical News.

ALBANY MEDICAL COLLEGE ALUMNI ASSOCIATION OF GREATER NEW YORK.— The second annual banquet of this association, held at the Hotel Savoy, January 31st, was in every way a successful re-union. The tables were laid in the form of a cricket-bat, and in the middle of the main table sat Dr. William H. Thomson, '59, president of the association.

The toasts of the evening were responded to as follows :

"Our University," Rev. Dr. A. V. V. Raymond, President of Union University; "The Pulpit," Rev. Dr. W. J. Harsha; "The Modern Lecturer," Rev. Dr. Wesley R. Davis; "The Army and Navy," Dr. James P. Kimball, '64, Surgeon and Major, U. S. A.; "Dentistry and the Medical Profession," Dr. R. Ottolengui ; "Our Alma Mater," Dr. Willis G. Tucker, '70 ; "Our Association," Dr. John W. Warner, '47.

Among others present were Drs. Warren C. Spalding, '81; Edwards Hall, '44 ; William Stevens, '75; F. W. Loughran, '90; Emil Heuel ; R. B. Burton, '55; C. de W. Van Dyck, '79; S. E. Armstrong, '85; J. N. Droogan, '91; W. J. Woodruff, '94; M. J. Lewi, '77; E. F. Quinlan, '68; W. F. Gardiner, '83; Horace T. Hanks, '61; Charles Van Wert, '87; S. E. Ullman, '80; John A. Cutter, '86; Allen Fitch, '79; R. G. Andrew, '66; Edward J. Griffiths ; George H. Baker, '86; J. C. White, '66; John W. Gould, '80; Thomas H. Flynn, '90; Edwin Barnes, '65; H. T. Brooks, '87; H. F. C. Müller, '87; L. N. Lanehart, '90; Josiah Hasbrouck, '85; R. F. Macfarlane, '88; S. O. Myers, '74; M. L. Rhein, '80; H. B. Mabon, '57; R. E. Fivey, '87; Thomas H. Willard, '87.

STATE OF NEW YORK — CIVIL SERVICE COMMISSION — EXAMINATION FOR JUNIOR PHYSICIANS AND MEDICAL INTERNES.—An open competitive examination will be held at Albany, February 4, 1897, at 9.30 A. M. for the following positions :

JUNIOR PHYSICIANS.—Applicants must be at least twenty-one years of age and graduates of a legally chartered medical college which is recognized by the University of the State of New York,

and have had at least one year's actual experience on the medical staff of a public general hospital, or have served at least one continuous year as medical interne in a State hospital for the insane. Salary $900 and maintenance, increasing with length of service.

MEDICAL INTERNES.—Applicants must be at least twenty-one years of age and graduates of not more than three years' standing of a legally chartered medical college which is recognized by the University of the State of New York. Salary $600 and maintenance.

SUBJECTS OF EXAMINATION FOR BOTH POSITIONS: 1. Anatomy. 2. Physiology. 3. Materia Medica and Therapeutics. 4. Chemistry. 5. Obstetrics. 6. Theory and Practice. 7. Surgery. Time allowed, six hours. Applications must be filed in the office of the Commission at least five days prior to the date of the examination. For proper blank, address Secretary New York Civil Service Commission, Albany, N. Y.

—The following medical item appeared in *The Boston Weekly News-Letter* January 14, 1717, the first newspaper, and at that time the only one, published on this continent:

Boston, On the Lords day Morning the sixth Currant, a strange thing fell out here, One Thomas Smith a Sawyer about four Month ago, bought a Lusty Tall new negro, fit for his Employ, who after complain'd of something within him that made a Noise Chip, Chip, Chip; his Master sent for a Doctor, one Sebastian Henry Swetzer a German, who told him he had Worms, whereupon he gave him some Physick on Wednesday: from Thursday till the Lords Day he gave him some Powders, which on the Lords Day had that effect as to cause him to vomit up a long Worm, that Measur'd a hundred and twenty eight Foot, which the negro took to be his Guts; it was almost as big as ones little Finger, its Head was like a Snakes, and would receive a Mans little Finger into its Mouth, it was of a whitish Colour all full of Joynts, its tail was long and hard, and with a Microscope it seem'd to be hairy; the Negro before voiding the Worm had an extraordinary Stomach.

State Medicine.

EDITED BY HARRY SEYMOUR PEARSE, M. D.

Examination of Cultures for Diphtheria Bacilli by the State Board of Health. —Recently the State Board of Health has received requests from physicians in country districts for the examination of "throat swabs" to ascertain the presence or absence of the bacillus of diphtheria. Some swabs have been received, and referred to the Bender Hygienic Laboratory for examination. This is a new departure for the State

Board, and we hope that it may lead to an organized system. The local boards of health of cities of any considerable size furnish their practitioners with means of diagnosis by placing tubes and swabs at public stations for their use. The physician swabs the suspected membrane, places the swab in the tube, sends the tube to the local laboratory, and within twenty-four or thirty-six hours receives a report from the bacteriologist. This report influences materially the subsequent treatment and management of the case. The country physician does not enjoy these privileges.

It has been suggested that the State Board supply these physicians with the same means of diagnosis as the city boards do their physicians. And, to facilitate rapidity in the method, that the State be divided into districts, each containing a laboratory, to which the swab could be mailed and an answer received in at least forty-eight hours. All the large cities of the State have laboratories or colleges, and could be made the centers of such districts.

As to the tubes, the State board could supply them or issue circulars of instruction to the physician for preparing them. The first would, of course, be the safer method. The matter is only in the stage of suggestion, but it is certainly worthy of mature consideration, and there is no reason why the physicians in the smaller towns and remote districts should not receive the same benefit from scientific advances as their more lucky city brothers.

The Question of Compulsory Vaccination. — At a recent meeting of the Medico-Legal Society of the State of New York, a paper was read in which vaccination was assailed. This led the president of the Society, the Hon. Clark Bell, to issue a circular letter to the boards of health of different States inquiring as to their respective positions toward "compulsory vaccination," and their methods of obtaining vaccine virus.

In the new charter for "Greater New York," now being drawn, a "compulsory vaccination" clause is alleged to have been contemplated. This appears to be another reason why Mr. Bell has felt the pulse of the different boards on this question.

During the recent agitation of the vaccination question in England, a Royal Commission was appointed to investigate. Their report was adverse to any element of compulsion entering into a law. Similar reports followed in Germany and other states.

Dr. George B. Fowler, Health Commissioner of New York city, replied "that his board was not, and never had been, in favor of

compulsory vaccination; that it co-operated with the board of education in securing the vaccination of pupils and teachers; and "that in his opinion such a statute would result in antagonism to the work."

Dr. Moreau Morris, Health Department, New York city, replied as follows:

DEAR SIR.—To the question, "Compulsory vaccination, should it be enforced by law?" I would respectfully answer, that for a general State law, negatively, but for local purposes in cities or villages having a population of 1,000 or over, where large congregations of school children especially congregate, there should be compulsory vaccination as a precedent to school admission.

Col. W. P. Prentice, counsel for the health authorities, says: "I believe we have at present sufficient laws if they are duly administered and properly enforced."

Sir Frederick Batman, of Norwich, England, writes: "I hold that any individual who from his obstinacy declines to avail himself of the protective influence of vaccination, and thus risks not only his own life, but that of his innocent neighbor, is just as much liable, or ought to be, to punishment by law, as he who knocks his neighbor down, or picks his pocket; and I maintain it is a wicked crime for persons in the broad daylight of the nineteenth century, from obstinacy or ignorance, to refrain from being vaccinated and from having their families similarly protected." Continuing he says:

"The importance of the subject, and the fact of the recent outbreak of smallpox in this Union, must be my excuse for dwelling at such length on the efficacy of vaccination. The arguments for the necessity of it have been much strengthened by the remarkable discoveries recently made in connection with bacteriology and the antitoxin treatment of disease, discoveries which have been hailed with acclamation in all parts of the civilized world; and I unhesitatingly and emphatically assert that the sanitary authorities will be neglecting their duty, in the face of all this, if they do not resolutely and unflinchingly put into operation the compulsory clauses of the Vaccination acts."

Dr. C. S. Lindsley, Secretary of the State Board of Health of Connecticut, writes:

"Defending vaccination and defending compulsory vaccination are two quite different things. I am not an advocate of compulsory vaccination. I am positively opposed to it, but wholly on the ground of expediency. The people of this country are too thoroughly imbued with a sense of personal independence to submit patiently to personal compulsion. The attempt would excite hostility to vaccination that does not exist at present, and would hinder rather than promote the cause of vaccination."

Dr. S. W. Abbott, Secretary of the State Board of Health of Massachusetts, says :

"Very little supervision is exercised in this country over the production of vaccine lymph. The State Board of Health of Minnesota maintains a small plant and produces lymph of a reliable quality. In my opinion, all vaccine production should be under the supervision either of State or National authorities.

"The only security now given is the guarantee of the producer.

"The best argument for compulsory vaccination is the present condition of Germany, which has been practically free from smallpox for the past twenty years, in consequence of thorough enforcement of the law. Most of the deaths in Germany from smallpox, in three years, have been those of recent unvaccinated immigrants from Russia, France or Italy.

"The Imperial Board of Health of Germany has just issued a publication, entitled 'Smallpox and Vaccination,' which presents very fully the history of the subject, together with much that is valuable with reference to present conditions in that country. Many conditions are presented which do not reflect creditably upon the condition of the neighboring countries, and show that the prevalence of smallpox in these communities is inversely as the thorough manner in which vaccination and re-vaccination are conducted."

Dr. Benjamin F. Lee, Secretary of the Pennsylvania State Board, agrees with Col. Prentice upon the law of the matter and says that his board makes frequent and through inspections of all the vaccine farms of the State.

To draw a few brief conclusions from these reports:

I. All health authorities and intelligent physicians defend vaccination. There is no question there.

II. On the question of "compulsory vaccination" there is about an equal division of opinion, among physicians, health and legal authorities.

III. In the event of the passing of a "compulsory vaccination" law in any State, there should go with it a statute placing the manufacture of virus under State or municipal control.

IV. In this country compulsory vaccination is justified by many authorities only in the existence of an epidemic. It is, perhaps, a fact that such a clause, either in a law or a charter, would defeat its own ends. The average United States citizen shows his resentment when his personal liberties are assailed.

In ending, it seems not unfitting to say, that in the future existence or non-existence of a compulsory clause, either in a State law or local charter, physicians would be happier and the people safer if the manufacture of virus were under the control of an official bacteriologist, who would be held responsible for the purity of the

virus put upon the market. Either that or let the State conduct a farm as does Minnesota, and issue virus under a seal vouching for its purity.

To Guard against the Plague. — On Monday evening, January 25th, Senator Mullin introduced a bill in the New York State Legislature appropriating $5,000 for the purpose of preventing the introduction of the bubonic plague at the port of New York. This bill was introduced at the request of Dr. Doty, Health Officer of the Port, to enable him to meet the present demands for a rigorous disinfection of incoming vessels at that point.

The measure is a good one. We certainly hope that he may procure the necessary appropriation for present demands, and any other which he may require to place the possibilities of bubonic infection in his territory at the lowest point.

It is true that the chances that the plague will reach this port are small; still, while even remote chances exist, it would be criminal to overlook the merest possibility of infection, or fail to guard against it. The scourge has traversed Asia with a mortality of over fifty per cent., with great devastation of cities, and has reached the Red Sea. Every government in Europe and Northern Africa is on the *qui vive* at their ports of entry for its manifestations, armed with modern scientific methods, to cut it down before it can get a foothold.

Our ports are as accessible to the entrance of vessels and merchandise from the stricken districts as any in Europe, and it is for us to be as fully alert as they.

Obituary.

KENYON A. BUSHNELL, M. D.

Dr. Kenyon A. Bushnell died at his home in Little Falls Wednesday, December 23, 1896. Dr. Bushnell was born in Albany in 1856, and moved to that city with his parents, Dr. and Mrs. B. E. Bushnell, in 1858. He received his education at the Little Falls Academy, the Cazenovia Seminary and the Albany Medical College, graduating with the class of 1879. He has since practiced in Little Falls. In 1880 Dr. Bushnell married Miss Alice Grey, of Herkimer; she died in 1892, and soon after he married Miss Jennie McHenry, who, with his mother, survives. Dr. Bushnell has held the offices of alderman, poor doctor and health officer for several terms.

Scientific Review.

Pyrexia and Antipyresis—Liebermeister in his classical work (*Handbuch der Pathologie und Therapie des Fiebers*) claimed that rise of temperature was the important factor in the symptom-complex of febrile conditions, and to it he attributed all the accompanying symptoms; increased pulse rate and respiratory movement, cerebral disturbances, metabolic changes, parenchymatous degenerations, etc. He believed that a patient with a temperature of 104° for any length of time would succumb in a period varying according to the resistance offered, while with a temperature of 108° he would quickly die. Three kinds of argument were advanced to prove the correctness of this theory. (1) Clinical statistics which show the higher the temperature the greater the danger; (2) experimental results from the effect of overheating animals; (3) therapeutic evidence — drugs and the treatment by cold baths.

This theory of Liebermeister quickly became popular, especially as it indicated deductive, rational, therapeutic action — the antipyretic treatment of fever. Gerhardt and other clinicians quickly showed, however, that the significance of fever varied with the underlying pathological conditions, and instanced cases of malaria with high fever for weeks without danger, while cases of asthenic typhoid with low temperature were very fatal. They stated that the theory of the dependence of all the symptoms upon the temperature was not tenable, and that there were few symptoms directly due to the pyrexia. An increase of pulse rate and respiratory movement may be due to the pyrexia, yet how strikingly different are the pulse and respirations in different fevers. The attempt to prove with each increase of temperature a proportionate increase in pulse rate is only successful within broad limits. The rapid pulse of septic conditions and the slow pulse of typhoid occur at once to the mind. To what extent respiratory movements are dependent upon temperature is not entirely certain. Welch (*Cartwright Lectures*) found that animals placed in heated boxes become dyspnœic, but upon removal they breathed quietly. Richet also has demonstrated that hounds placed in hot air without increased bodily heat exhibit dyspnœa, a condition probably due to reflex irritation of the skin. In disease the state of the respiratory passages, the condition of the heart and nervous system, the action of the diaphragm due to abdominal changes, play a greater part than does the temperature

upon the respiratory movement. The attempt was made to attribute all the cerebral disturbances to the pyrexia, but Liebermeister himself admitted that idiosyncracies and toxic agents might have great influence. Patients with a temperature of 104°–105° may be entirely free from mental disturbance, while severe mental symptoms may occur without much rise of temperature. The other conditions, metabolism, parenchymatous degenerations could likewise be shown to vary markedly in different febrile states. The early experiments to determine the effect of heat upon animals were misleading, as rabbits placed in very small boxes died usually at a temperature of 104° with fatty degeneration in about twelve hours. Naunyn was able, however, to keep them alive for 10–12 days and Welch for three weeks at a temperature of 107°.3 in large, well-ventilated boxes. In aseptic wounds a temperature of 105° has been observed without marked symptoms, except an increase in the pulse, the patient having a good appetite, normal strength and no cerebral disturbance.

The modern theory of fever advocated by Unverricht (*Sammlung Klinischer Vorträge No. 159*), and based upon bacteriological experimentation, is that fever is a complex of symptoms, among which the increased bodily temperature plays an important part, but is not the cause of the other symptoms.

Cantani, in the Tenth International Medical Congress, stated that he had found in cultures of bacteria a special substance, probably common to all bacteria, which induces the symptoms of fever, and to this substance he gave the name "pyrotoxina bacterica."

Edelberg (*Archiv. für experiment. Pathol. und Pharmak., B'd 12*), discovered that the injection into the body of fibrin ferment in definite quantities produced an increase in temperature, and drew therefrom the conclusion that rise of temperature was due to fibrin ferment set free in the blood. The injection of pepsin and trypsin caused the same condition. Hammerschlag (*Arch. für experiment. Pathol. B'd 27*) demonstrated that an increase of fibrin ferment is not found in febrile blood, and that many substances can induce pyrexia without the production of a ferment being possible in all cases.

Herz (*Untersuchungen über Wärme und Fieber, 1893*) attributed rise of temperature to cellular change, and likened it to the heat developed by the yeast plant. What is common to all these conditions is that certain injurious principles, which in great intensity tend to the destruction of the organism, produce an increase of

organic activity, *i. e.*, fever, when present in less force. Fever is thus the reaction of the organism to a poison, the expression of its resistance to destruction.

Is increase of temperature of itself injurious to the organism? The last decade has shown a marked change in medical opinion upon this subject. Most of the febrile conditions are now known to be due to the invasion of bacteria. The action of their products, the toxins upon the tissues, and not the fever, is at the present time believed to cause death. Comparatively few patients with infectious diseases die from hyper-pyrexia. Frequently, at the end the temperature is strikingly low or the whole course of the disease has been asthenic, as in pneumonia of the aged and in sepsis. Even when a patient having an infectious disease with high fever dies, the high temperature is probably more truly an index of the severity of the poisoning than the cause of death. High temperatures not associated with toxæmia, as after injury of the cord or brain, or in neuroses, do not produce immediate death, and the height at which the temperature becomes injurious to the organism is still a debatable question. Experimental bacteriological studies render probable the conclusion that rise of temperature as such inhibits the development of bacteria, and thus increases the resistance of the organism. Pasteur (*Charbon et septicémie*) has shown that the virulence of the bacilli of anthrax is weakened when subjected to continued temperature of 42°–43° C. Koch (*Zur ätiologie des Milzbrandes*) found that these bacilli grew best at 35° C., and that by increasing the temperature their development was curtailed, and ceased completely at 45° C. The streptococcus erysipelatous (*De Simone, Il Morgagni, 1895*), stops growing at 39°–40° C., and dies at a higher temperature. High temperatures have also been shown to have an injurious effect upon the bacillus tuberculosis, the spirilla of recurrent fever, diplococcus of Friedlander, the pneumococcus of Frænkel, also the fæcal bacteria, with the exception of the bacillus coli. Müller (*Zeitschr. für Hygiene und Infekt., B'd 20*) found a temperature of 40° C. did not appreciably limit the growth of the typhoid bacillus, which was destroyed by a temperature of 44°.5 C. He discovered, however, that for the development of a new generation a longer time was required at 40° C. than at the normal temperature. In these experiments the influence of temperature was considered alone, but in disease the organism has other elements which assist in resisting infection; therefore results

obtained from experiments upon diseased organisms are more valuable.

Filehne (*Proceedings of the Physiological Soc., Cambridge, Eng., 1894*) investigated the effect of the erysipelas poison under high and low temperatures. In overheated animals the infection appeared more quickly, was of much less intensity, and disappeared on the third day; while in control animals it appeared later, was of much more marked intensity, and only disappeared after ten to twelve days. When the animals were artificially cooled, the results were still more serious. Experiments made by Cheinisse (*Comptes rendus, 1896*), in animals whose temperature had been reduced by guaiacol, showed a much more severe infection and death from acute sepsis. That this was not due to the action of guaiacol was determined when animals treated in the same way, and at the same time, kept warm, evinced no bad results. Löwy and Richter (*Deut. Med. Wochenschr. 1895*), inoculated animals whose temperature was raised to 42° C. by means of the Sachs-Aronson brain puncture with diphtheria bacilli, chicken cholera, hog erysipelas and pneumonia, with the following results: in doses of a hundred and more times the strength of the fatal dose, there was a prolongation of life beyond that of the control animals, in some cases marked; in doses twice or three times the fatal strength, the animals survived. Kast (*Kongress für innere Medicin, 1896*) recently injected guinea pigs with virulent typhoid bacilli, in doses from one-quarter to one-half the fatal dose, and kept the animals at different temperatures. Those maintained at a temperature of 36° C. died without exception, while those at 40° to 41° C. survived. From these experiments, it seems highly probable that rise of temperature plays an important part in curative processes.

The argument based upon therapeusis, that the lowering of temperature improves the condition of the patient, is not altogether in favor of Liebermeister's theory. In typhoid it is possible that the cold baths may act in other ways than by lowering temperature; in fact, Delafield believes that the general condition of the patient is a far better indication for the use of the bath than the temperature. The temperature may not be lowered immediately when the patient is taken from the bath, but may fall later, and other symptoms may be improved before the temperature is lowered. The use of antipyretic drugs may lower the temperature, and yet produce no improvement in other symptoms. Von Jaksch has found that

patients with pneumonia, whose temperatures had been kept reduced by drugs, did worse than those not treated in this way.

The fact that all warm-blooded animals respond by rise of temperature to the introduction of certain substances, makes it appear probable that pyrexia, like inflammation, is a definite weapon of defense.

Just as we are entering the marvelous realm of serum-therapy, with all its possibilities, it seems not at all a wild dream to believe that the near future may lead to the discovery of a pyrogenic substance which will enable us to imitate the means which nature has so long and so forcibly indicated as one of her safest defenses against infection.

Current Medical Literature.

The Spread of Plague.—*The Lancet* (*January* 2 *and* 9, 1897) prints in full a lecture by Dr. James Cantlie, formerly of Hong Kong before the Epidemiological Society. He defines plague as an acute febrile disease of an intensely fatal nature, characterized by inflammation of lymph glands, marked cerebral and vascular disturbances and by the presence of a specific bacillus. The term "bubonic" is a misnomer, the so-called bubo not being a sympathetic swelling, but the outcome of a blood poison. One never hears of scrofulous buboes or of the buboes of tertiary syphilis. Dr. Cantlie reviews the various names which have been bestowed on plague and suggests as scientific the name malignant polyadenitis, and classifies it among the specific fevers.

He claims it is met within a definite area, the "plague belt," that Mesopotamia and adjacent countries form the home of the plague, and with this locality as a focus it may spread northward to the Caspian Sea, westwards to the Red Sea, southward as far as Bombay and eastward to the China Sea. Plague is the slowest traveling disease known and may take months or years to extend a few miles. It is always associated with scarcity and want, overcrowding and faulty sanitation. Dr. Cantlie concludes that free ventilation, and attention to ordinary hygienic rules lessen the chance of contracting the disease to a very great extent, not only for Europeans but also for natives, but that all are liable to contract the disease when, either from the call of duty or wilful neglect, exposure is extreme.

The cause of plague is a definite bacillus. This was discovered by Kitasato, the Japanese bacteriologist, in 1894 during the Hong Kong epidemic. This bacillius has been described as (1) a diplococcus; (2) a diplococcus enclosed in a delicate capsule; (3) a short bacillus with rounded ends and a clear space or band in the center. This bacillus is found constantly in the blood of infected persons. From our present knowledge the following conclusions can be drawn: (1) that the plague bacilli vary in size; (2) that cultivation experiments produce bacilli identical in appearance, and (3) that a somewhat similar bacillus

is found in the soil (whether at all times or not is not known), which resembles the now virulent form, the result of bacteriological culture. During the present epidemic the confirmation and elucidation of many points will be anxiously looked for.

The rôle animals play in plague is very interesting. The disease is commonly known as "rat plague," which shows the wide-spread infection of the rat during plague epidemics. One family of rats presents a habitation well nigh corresponding to the present distribution of plague. At Bombay some time before human beings were affected it was noticed that thousands of rats were dying and children used to amuse themselves throwing them from the staircases into the streets and gulleys. The bacillus of plague has been often found in affected rats. It is not known definitely how the rat is infected. The miasmatic theory, that the rat inhales or imbibes the poison from the soil, seems very reasonable. Another probable source of infection is from actual consumption of poisoned material. Pigs, dogs, snakes, jackals, and pigeons are also fatally affected by this malady, while none of the purely herbivorous animals—norses, sheep, rabbits, etc., are attacked.

Dr. Cantlie's conclusions from the study of the infection in animals are (1) that the rat is the animal most likely to be attacked by plague; (2) that rats suffering from or dead from plague may infect other animals who consume them, and (3) that the rat may infect man, but the means of conveying the contagion is not known.

The time intervening between exposure and development of plague is from three to six days. The onset is usually sudden and severe, and in a few hours or days a swollen gland develops and the disease runs its course. The patient is seized with headache, fever and complete prostration.

Dr. Cantlie believes the various types of this disease to be allied and caused by a diplobacterium in the blood and tissues. H. L. K. S.

Case of Glaucoma with Unusual Features. — In the last quarterly number, for 1896, of *The Annals of Ophthalmology and Otology*, Dr. Robert L. Randolph publishes the history of a case of chronic glaucoma, with some unusual features. It was that of a healthy man, 61 years old, manager of a large brewery in Baltimore. A very unusual feature of the case was a haze of the right cornea, so dense as to render the outlines of the pupil quite indistinct to the surgeon, which haze the patient declared to appear every morning and disappear every afternoon. The clouding seemed to involve the substance proper of the cornea, and was uniformly distributed. Pain did not exist, and the only unpleasant feature was the disturbance of vision. Aside from the haze, no abnormity was objectively visible. The fundus could not be examined, ophthalmoscopically, because of the cloudiness of the cornea. This was in 1892. Patient was told to return for examination the same evening, when the cloud should have disappeared, Dr. Randolph being, meantime, skeptical as to the reality of such disappearance. But when the patient returned, that evening, the cornea was absolutely clear and bright. The ophthalmoscopic examination then revealed a high grade of myopia of the right eye (the one in

question), and glaucomatous cupping of the optic nerve disc, though the condition was not at all striking. With glasses correcting this myopia, vision of the affected eye was 20–40, while that of the left eye was nearly 20–20; the patient had complained of the haze about three weeks. Eserine solution, a grain to the ounce, was prescribed, to be used as a collyrium, thrice daily. Five days later the patient reported that the haze still appeared daily, but lasted only about one-third as long as formerly, before treatment. A week later the patient reported that he had not observed the haze for three days. Dr. R—— then lost sight of him for 4 years; during those years he had had no recurrence of the haze during the spring or summer months, but it had reappeared each fall and winter; then the eserine had been used, with variable but decreasing effect, till, in November, 1895, the haze returned, with vigor, and the eserine did not effect its removal. The corneal haze was then very dense, like that of a case of interstitial keratitis. Intraocular tension was decidedly elevated, and vision was only 20–200, with glasses. Stronger eserine failed to benefit. The haze cleared daily, with three exceptions, when, in the evening, there had appeared a halo about street-lamps. A month later vision was reduced to the ability to count fingers across the room. Iridectomy was advised; was consented to a week later, during which week patient had consulted two other ophthalmic surgeons, who had also advised the operation. The iridectomy was performed; four months later, right vision was more than 20–40; about a month after the operation on the right eye, the same haze appeared on the left cornea, and was characterized by the same periodicity as had been observed in the case of the right. Tension in the left eye was markedly elevated during the existence of the haze, but not appreciably so at other times. There was marked cupping of the optic disc. After the operation of iridectomy, performed on the left eye, its vision became, like that of the right eye, more than 20–40.

The striking features of the case are:

1. The density of the clouding. Tension was elevated during the presence of the haze, and he was then conscious of a dull pain in the temples.

2. The periodical nature of the attacks. Also the freedom from the attacks during warm weather.

3. The co-existence of high-grade myopia, the opposite of the refractive condition which is supposed to predispose to glaucoma. C. M. C.

Incision of the Pericardium for Purulent Pericarditis.— Dr. H. Bohm, in the *Deutsche Medicinische Wochenschrift* (No. 48, 1896), gives a *résumé* of the reported cases of pericardiotomy, and reports one case treated by him in this way in the Israelite Hospital, Berlin. The whole number of cases thus far reported, including his own, is fifteen. Of these nine were cases of purulent pericarditis. In the others the exudate was of a different nature (in two hemorrhagic, probably tuberculous). His own case was that of a laborer thirty-three years old, due to influenza-pneumonia. The symptoms were cough, nose bleeds, dyspnœa, stitch in left side, high temperature (as high as 39.4), very rapid respiration. The heart dulness when greatest extended to within 1½ finger breadths of the angle of the scapula and over the entire left thorax in front, up

to the clavicle. Over all valves a light systolic murmur, breathing and heart tones very weak and vocal fremitus barely perceptible. A probe puncture was made in the third left intercostal space, two finger breadths inside the mammary line, and a turbid fluid mixed with threads was obtained. On microscopic examination it was found to be made up of coagula of leucocytes and cells.

Operation of pericardiotomy was performed. Incision was made, starting in the third intercostal space — a finger breadth from left sternal edge — five cm. long. Owing to the very weak pulse, no general anæsthetic was employed—but the infiltration anæsthesia of Schleich was used. As the pericardium was cut into, a great quantity of pus escaped. Dyspnœa disappeared at once. On the following day only little pain was felt and general condition was good. Patient was discharged from hospital three months after operation. A year after operation the only thing noticed was a light systolic drawing in at the apex.

Concluding, the author says: In only three of the fifteen reported cases, pericarditis was the *only* disease diagnosed during life (cases of West and Partzeusky), for which a *definite* etiological factor was *not* given, and in the case of V. Eiselsberg, in which a stab wound was the infecting agent. Twice the pericarditis, as a primary disease, was accompanied by a left-sided exudative pleurisy. Once it was probably directly transplanted from a left-sided empyema. Acute articular rheumatism was given as the cause in one case, influenza in three, once alone, and twice accompanied by influenza-pneumonia. In the remaining five cases the suppurative pericarditis must be regarded as the indication of a septico-pyæmic infection of the body, or as a metastasis of an osteo-myelitic purulent process localized in some part. Of the fifteen cases eight were cured, seven died. In only one of the fatal cases was the operation probably the cause of death, and then undoubtedly due to the mechanical shock of the sudden pressure of the solution used to wash out the pericardial sac, on an already much-weakened heart and patient. The most favorable cases were those where the pericarditis was primary (so-called), or when only complicated by a left-sided pleurisy. C. F. T.

Total Vaginal Extirpation of the Uterus and Adnexa for Severe Chronic Diseases. — G. Leopold, in the *Archiv für Gynäkologie*, 1896, vol. 52, part 3, reports operations upon 57 cases, with the following conclusions:

The advantages of total vaginal extirpation in chronic, severe, purulent and non-purulent diseases of the adnexa are as follows:

1. The complete removal of the diseased organs without leaving the inflamed and still harmful uterus.

2. The wound is made in the deepest part of the abdominal cavity, and thus affords the best possible drainage.

3. The field of operation can be made accessible at any time for women who have not borne children, even for severe tumors of the tube and ovaries as large as a child's head.

4. The absence of an abdominal wound and the avoidance of a later abdominal hernia.

5. The operation is far less dangerous than cœliotomy, because the intestines do not come within reach of the operation. But infecting the overlying intestines with pus is almost without importance, since by the rapid matting of the intestine overlying the pelvic inlet, cutting off of the abdomen follows, so as to make the work almost extra-peritoneal.

Finally, experience teaches that very exhausted and debilitated patients can undergo this operation, while opening of the abdomen is regarded by them as almost beyond consideration.

These facts may be joined to former conclusions, that the greatest foresight must govern the opening and emptying of the pus sac, that the escaping pus may not come in contact with neighboring wound surfaces.

The following recommendations are given: making only a small opening in the pus sac, permitting only slow discharge; washing away and rubbing off the pus; perfect compression of the opening, and slow introduction of the fingers for the loosening of the pus sac. Finally, a second (security) ligature should be placed upon the upper part of the ligamentum latum (arteria spermatica), and the smallest hemorrhage from the vaginal walls should be controlled. Secondary hemorrhage will then never occur, and application of clamps will not be necessary.

Epilepsy Associated With Asthma.— In a recent number of the *Comptes Rendus de la Sociètè de Biologie*, Charles Féré reports a case of asthma associated with epilepsy. The patient was an individual of forty-eight, with a family history of rheumatism and asthma in his father, who began to have typical attacks of nocturnal asthma at thirty. As he became older there was gradually added to these a feeling of anxiety and distress. He would wake up feeling that something unusual was going to happen, but could not say whether the feeling was one of terror, anger or astonishment; he simply felt oppressed, and at the end of some time became unconscious. During this period of unconsciousness he was wildly delirious, the delirium lasting some hours. On waking the next morning he remembered nothing of his previous night. Later these crises appeared in the daytime, and he finally succumbed in one of them. His son, the patient's brother, yet living, is subject to attacks of delirium, coming on suddenly in the night, always about the same time, and consisting of an outpouring of expletives against imaginary persons, followed by loss of consciousness.

The patient himself had convulsions at the time of his first dentition. From the age of four years he had attacks of migraine, accompanied by convulsions at times. At nine he began to have nocturnal epilepsy, always coming on at the same time, succeeded by chilly sensations, and followed by expectoration and profound sleep. At sixteen he had a sharp attack of epilepsy, and since this time his asthmatic attacks have alternated with attacks of epilepsy, coming on at the same time of night, and occurring in the form of sensations of fear, followed by loss of consciousness. At the same time he became subject to daily paroxysms consisting of temporary loss of memory and attacks of unconsciousness of the petit-mal type, accompanied by chilly sensations, with the presence of "goose skin" and palmar hyperidrosis. Féré remarks that he has seen

attacks of a similar nature to the latter in hysteria without loss of consciousness. G. B.

Enteralgia.—In a recent clinical lecture (*La Clinique, January*, 1897), Potair presented a case and discussed very fully this little studied affection.

The case presented was a man 57 years of age, who, shortly before admittance to the hospital, had been suddenly attacked a half hour before dinner with a very violent pain in the right hypochondrium and extending into the left and radiating all over the abdomen. Pain persisted two or three hours. Patient has suffered from similar attacks for last seven years, the attacks occurring more or less regularly about once a month.

The examination of abdomen is negative with exception of sigmoid flexure, which, without being distinctly enlarged, is felt as a resistant, elastic cord rolling under the fingers, and on deep pressure, painful.

Potair describes enteralgia as being acute in its onset, and without any appreciable cause, and particularly characterized by paroxysmal pains occurring at variable intervals. He maintains that the affection may be hereditary, and most frequently found in neurotic individuals. It is more common in men.

The nature of the affection is purely functional, and, according to Potair, entirely independent of organic disease, but due to a continued or intermittent painful contraction of the sigmoid flexure. In support of this view he points out that in these cases the fœces which are always hard, gradually diminish in size until no larger in diameter than a lead pencil, and after the attack again become normal.

Valerianate of ammonium is highly recommended, with attention to hygienic treatment. Caution is given in regard to cathartics. Never use drastic or irritating purges, and when necessary employ castor oil or rhubarb. A. J. L.

The Operative Treatment of Retroflexio Uteri.— A. Buschbeck, in the *Archiv für Gynäkologie*, 1896, vol. 52, part 3, gives the following conclusions as to the value of the different procedures. Three methods come into consideration.

With opening of the peritoneal cavity:

1. The direct or indirect fixation of the fundus uteri (Olshausen, Sänger, Czerny, Leopold and others).

2. The shortening of the ligamentum rotundum from the vagina plica vesico-uterina (Bode, Wertheim).

Without opening of the peritoneal cavity:

3. The shortening of the ligamentum rotundum from the inguinal folds (Alquié-Alexander, Adams, Kocher and others).

The procedures 1 and 2 produce a simple, 3, a double wound. In 1 and 3, abdominal hernias are not entirely obviated; but both give excellent results. In 2 there has not been sufficient observation as to hernia and sequelæ.

In retroflexio uteri mobilis of a multipara procedure No. 2 is very easy and quickly done, but is very much more difficult in a virgin or nullipara. In the latter, if necessary, No. 1 or 3 is much more advisable. In both, No. 1 is preferable, since it is very quickly done, and very certain in results.

If the operation is for retroflexio uteri fixati, then procedure No. 3 (Alexander-Kocher) is injudicious. Without loosening of the adhesions nothing is gained; in a multipara either procedure No. 2 is employed, but with opening and closing of Douglass' pouch, or procedure No. 1, with tearing of the adhesions and planting of the fundus uteri forward; but in a virgin or nullipara the best and surest is procedure No. 1 (ventro-fixation), with removal of one-sided or double-sided diseased annexa.

Increased Vascular Tension in the Kidney a Cause of Renal Pain, Hæmaturia and Albuminuria (*British Medical Journal, December*, 19, 1896).—Newman (Glasgow,) read a paper on this subject before the Clinical Society of London, December 11, 1896, and pointed out that the causes of increased vascular tension in the kidney were (1) mechanical; (2) some morbid process.

Torsion of the renal vessels and of the ureter might produce (1) dull, aching pain in the renal region, associated with occasional paroxysms of colic similar to those produced by renal calculi; (2) hæmaturia, with or without blood casts in the urine; (3) albuminuria, with or without tube casts in the urine. The writer narrated four cases of movable kidney, with symptoms simulating renal calculus; two cases in which strangulation of the bowels appeared to have produced reflex spasm of the renal vessels or of the walls of the ureter; one case with a history of small oxalate calculi where the kidney was enlarged, tense, and of a dark chocolate color, but no calculi were found.

He was disposed to regard marked hyperæmia of the kidneys as a frequent occurrence in cases of acute intestinal obstruction, whilst it ought to be looked for in all acute abdominal affections. The non-elimination of urine might be due to spastic stenosis of the ureter, or to spasm of the small renal vessels secondary to lesions of the bowel or omentum.

Dr. Newman admitted in the discussion the great difficulty in deciding what cases were likely to be benefited by surgical measures, but he had given relief to all his patients by operation.

Hydrobromate of Homatropine in Ophthalmic Practice.—A very important communication was made, by Dr. Florence Mayo, of Philadelphia, in the last issue of the London *Ophthalmic Review*, showing that a 1:40 aqueous solution of the hydrobromate of homatropine was practically as efficacious, if used as a collyrium, six times in twenty-five minutes, the rest of the hour elapsing before the surgeon practices dioptometry, as is a 0.8% solution of the sulphate of atropine. Complete mydriasis was thus produced. Dr. Mayo prefers to use the term "cycloplegia," as more significant than "mydriasis," as generally used; and "cycloplegic" for "mydriatic." Mydriasis ought to be reserved for dilatation of the pupil, while cycloplegia is paralysis of the ciliary muscle. After having used homatropine, as above described, as a cycloplegic, she used an ordinarily strong solution of the sulphate of atropine, one drop, three times a day, for two days; when it was found that the homatropine had produced quite as complete a cycloplegia as did the atropine later. The great advantage of the use of the homatropine is that its cycloplegic effect is transient, and has, ordinarily, disappeared within twenty-four hours; its mydriatic effect persists

longer than its cycloplegic. This article does not announce a new discovery, but Dr. Mayo has proved the case more fully than has previously been published. Dr. Mayo used the atropine, after the homatropine, in 110 cases, consecutive and non-selected (except that those few were excluded who were not bright enough to bear subjective examination well), and were from the general clinic. C. M. C.

Aetiology of Floating Kidney.— Rosenthal (*Therapeutische Monatshefte, December*, 1896), states that two conditions are certainly determined :— that it occurs practically only in women, and with them is a quite common occurrence, and that it is almost always on the right side. It occurs very rarely on left side or on both sides, and equally uncommonly in men. As women, especially those of the working classes, were most affected (80 per cent), the condition had been attributed to corsets and frequent pregnancies. Strümpell is of the opinion, however, that there is at times a congenital tendency to this condition, and claims that in children floating kidney has been found. The writer examined fifty-one girls and thirty-two boys, between seven and fourteen years of age, and of the girls found a complete wandering kidney in two, and in twenty-six a kidney palpable and movable. Among the boys three were found palpable. This condition can only be explained by the congenital female tendency to this condition, and its occurrence, especially on the right side, because of the size of the liver. There is a possible embryological explanation in the fact that the kidneys and genital organs have a common embryological origin.

Typical Cases of Menière's Disease. — M. Gevaert, in the *Journal of Laryngology, Rhinology and Otology* (December, 1896, p. 336) gives the histories of two typical cases of Menière's disease. The deafness in both cases was of apoplectiform onset, with vertigo, unconsciousness, vomiting and noises in the ears. In the first case the symptoms of vertigo and vomiting lasted three months, the disturbance of equilibrium eight months, with the subjective noises and deafness as complete as at first.

The second case was of similar onset, with complete loss of hearing of right ear. Tuning fork on vertex heard only in left ear. Examination of ear negative. Treatment consisted of iodide and bromide of potash and hypodermics of pilocarpine. Had no effect on the deafness, but the disturbances of equilibrium were much improved. In typical cases like the second, treatment consisting of daily injections (in the morning) of hydrochlorate of pilocarpine in doses increasing from $\frac{1}{2}$ to $1\frac{1}{2}$ centigrammes, and even more, has been recommended (M. Eeman). If begun in the first two weeks was more effective than Charcot's sulphate of quinine. C. F. T.

Affections of the Optic Nerve in Diabetes. — Schmidt-Rimpler (*La Presse Médicale, December* 6, 1896), claims that optic-nerve affections are very frequent in diabetic cases. He found 34 cases of optic nerve lesions in 140 cases of diabetes. In most cases there is a central scotoma, for colors, with some neuritis (optic). He thinks that when a central scotoma exists, the urine of the patient ought to be examined for sugar; that such examination ought to

be repeated, with intervals of several days' duration, for the diabetic sugar at times disappears from the urine for several days. In such conditions, the central scotoma is in no sense due to the abuse of alcohol or tobacco. Ophthalmoscopic symptoms are hyperæmia, or transient anæmia, of the macula. The prognosis is not unfavorable, when proper treatment is used. C. M. C.

Retroperitoneal Transplantation of One Ureter into the other. Wiesinger, (*Aertzlicher Verein zu Hamburg*).— This is a procedure advised when a ureter is injured during an operation, and the extirpation of the kidney is not desirable, or transplantation into the bladder is not possible. The peritoneum, at the point of crossing of the common iliac and the ureter, is incised, and the injured ureter is divided after ligation above and below at the same point on the opposite side, the peritoneum is opened, and the upper portion of the cut ureter is carried over behind the peritoneum and sewed into the normal ureter of the opposite side.

Actinomycosis and Madura Disease.— In *The Lancet* (*January* 2, 1897) Professor Crookshank reviews the subject, and after a preliminary historical sketch, describes the various manifestations, as follows:

I. *Actinomycosis of the Digestive System.* (*a*) Of the upper and lower jaw.— In cattle is frequently associated with carious teeth ; in man also the fungus may gain access through carious teeth, or wounds or fistulæ of the jaw, and very possibly by inflammatory processes in the pharynx and tonsils. The tumor is found in close connection with the bone, or in the sub-maxillary or submental region, and also in the prætracheal region. It occurs rarely in the interior of the bone. The peculiar feature of growths in this region is their apparent migration. Israel states that in one case a tumor occurred on the alveolar process, close to carious teeth, and later was close to the edge of the jaw in the submaxillary region. Thence it disappeared, and a large swelling formed below the hyoid bone, and after this had been incised and had healed, an abscess formed above the clavicle. In other cases the disease has been described as extending from the alveolar process to the temporal bone, or the base of the skull, destroying bones, and even reaching the brain ; or the growth may descend by the spinal column, implicating the vertebræ, and pointing in various directions.

(*b*) Of the lips, gums, buccal, mucous membrane and palate. — In cattle appears in the form of nodules, wart-like growths, or ulcers.

(*c*) Of the tongue. — In cattle shows itself in the form of nodules or wart-like patches under the mucous membrane, with a special tendency to ulcerate from the irritation of the teeth.

(*d*) Of the pharynx. — In cattle appears as polypoid growths.

(*e*) Of the intestines. — Small nodules about the size of a pea may be found in the human intestine in the submucous tissue and in the mucous membrane itself. They soften and form ulcers with undermined edges. They may undergo cicatrization, but generally the disease extends through the peritoneum to the abdominal cavity, and perforates the bladder or the intestines, or makes its way through the abdominal wall.

(*f*) Of the liver.— The actinomycotic growths in the liver of man appear honey-combed. The spaces between the fibrous trabeculæ are full of caseous matter, in which the more or less spheroidal masses of the fungus are imbedded.

II. *Actinomycosis of the Respiratory System.* (*a*) Of the nasal cavities.—In cattle may appear primarily or as the result of extension from the lips or pharynx.

(*b*) Of the larynx, trachea and bronchi. — In cattle, polypoid growths, either sessile or pedunculated, arise primarily in the larynx, trachea or bronchi, or occur secondarily by extension.

(*c*) Of the lungs.— Of especial interest because likely to be mistaken for tuberculosis. In man, the spores of the ray fungi are inhaled, and pass into the bronchioles and alveoli, where they produce proliferation of round cells, which undergo fatty degeneration. The resulting patches of peri-bronchitis or pneumonia become yellowish white, suppuration and hæmorrhage from the capillaries follow, and small cavities result, containing pus cells, fat granules, blood and the fungi. The symptoms are usually obscure, but the sputum may contain the fungi. The apices of the lungs are not, as a rule, affected. There is considerable clinical resemblance to chronic phthisis; cough, night-sweats, follow; shortness of breath, and hæmoptysis are symptoms common to both. In the second stage the disease spreads to neighboring parts, and pleurisy commonly supervenes. The disease may follow the prævertebral tissues, descend behind the insertion of the diaphragm, and point as an ordinary psoas or lumbar abscess; it may perforate the diaphragm and reach the abdominal cavity. It may also extend forward in the direction of the anterior mediastinum and the pericardium. In the third stage the disease comes to the surface, either over the chest, or in the neighborhood of the dorsal or lumbar vertebræ; a swelling appears of a livid color, and if punctured no fluid escapes, but if allowed to make its own way to the surface the skin gives way, a muco-purulent discharge, mixed with pieces of the growth, escapes, and the fungi can be readily recognized.

III. *Actinomycosis of the Skin and Subcutaneous Tissues.*

In cattle the subcutaneous tissues are a favorite seat, producing the so-called wens or clyers. In man, actinomycotic tumors of the face sometimes correspond with wens or clyers, and as in cattle they may discharge through the skin, and the opening close or a fistula result.

IV. *Actinomycosis of the Nervous System.*— Both in cattle and man, very rare. A most interesting case of an actinomycotic tumor of the brain in man has been described.

V. *Actinomycosis of the Reproductive System.*—Very rare in man and in cattle.

VI. *Unclassified Cases of Actinomycosis.*—There are a number of cases with varied symptoms and anatomical relations in which it has not been possible to satisfactorily determine the path of infection or to account for the seat of invasion.

BACTERIOLOGICAL DIAGNOSIS.—Careful examination of pus from a case of actinomycosis in man will reveal to the naked eye little yellowish, white or yellow bodies, which a casual observer might mistake for grains of iodoform.

On collecting some of the discharge in a test-tube and holding it between the light and the eye the tufts of fungi appear as brownish or greenish-brown grains embedded in a muco-purulent matrix. On spreading some of the discharge on a glass slip the largest tufts of the fungus are found to be about the size of a pin's head. They have a distinctly sulphur-yellow color by reflected light, but appear of a yellowish or greenish-brown tint by transmitted light. With a 1-6th objective the grains can be seen as rosettes of clubs. In some parts of the preparation the clubs are replaced by long, slender forms which are sometimes transversely divided into a number of short links.

In doubtful cases, staining by Gram's method reveals the typical forms. The author also describes the appearances of cultures of the ray fungus.

Mycetoma, or Madura foot, is a chronic local disease, attacking the hands and feet, and having considerable resemblance to actinomycosis. A small tumor forms on the hand or foot, which after a year or two suppurates and bursts, leaving one or more sinuses, from which peculiar black particles, or white and pinkish roe-like bodies, are discharged. It is a disease of tropical climates.

Diet in Typhoid Fever.— Barrs (*British Medical Journal, January* 16, 1897), pleads for a less restricted diet in typhoid fever. Typhoid patients suffer from an extreme degree of emaciation, feebleness and prolonged disablement, and it is with the hope of mitigating these results that this method of treatment is offered. The reasons for a fluid diet in typhoid are (1) because the patient cannot take solid food ; (2) because solid food is thought to be harmful in the febrile state; (3) because in typhoid fever solid food is believed to be not only undesirable, but absolutely dangerous. Of these the first is the only good reason, and the writer gives solid food to these patients whenever they can take it. In convalescence there is no basis for the belief that the giving of solid food induces a relapse if the specific nature of the infection is accepted. As to perforation, no method is more calculated to delay healing and thus favor perforation as the prolonged starvation of fluid feeding. In regard to peristalsis there is no sufficient reason for believing that easily digested solid food produces more intestinal movement than does fluid nutriment. In the acute stage he follows the rule of Sir William Roberts applied to some other ailments — " Eat what he likes and what agrees with him." Give in typhoid fever such wholesome food, solid or liquid, as he can take, using the word " take " to mean what he likes, wishes and enjoys. To give a patient with a dry and shrivelled tongue, teeth covered with sordes, semi-comatose, any solid food would be as silly and cruel as to withhold it from a patient who expresses himself as genuinely hungry and looks so because his temperature is not normal or because his bowels are acting a little too freely. Patients with dry tongues (not simply furred tongues), lips and teeth, cannot have an appetite for anything but water. Whenever a patient can eat minced meat and enjoy it there is never much doubt as to his recovery. The objections to the administration of solid food during the fever are (*a*) increased diarrhœa, (*b*) perforation. The author's cases show that reasonable diet of any kind has no effect on the diarrhœa, which is very variable even with the strictest dieting. The

possibility of perforation is the most important point. Perforation is not a common accident, occurring in from 2 to 3 per cent, of all cases. It may be due to, (1) direct extension of the typhoid process through the peritoneal coat of the intestines; (2) undue stretching by flatulent distension when the peritoneal coat has been exposed by separation of the slough; (3) violent peristalsis as that induced by purgatives or foreign bodies when the peritoneum only forms the floor of the ulcer. Tympanites and violent peristalsis are not more likely to occur under solid feeding than under a strictly fluid diet. If the food is digestible and the stomach is capable of digestion, it will reach the seat of typhoid lesion in the same state of fluidity as does milk. It is generally admitted that a diet of normal proportions of wholesome solid food (meat and bread), is much less likely than a fluid diet to give rise to an excess of intestinal gas. Then solid food cannot be the only cause of perforation, as it occurs when the diet is strictly regulated. The majority of the cases die from conditions, as cardiac failure, lung complications, and all the effects of general infection against which the patient can set only such powers of resistance as he possesses and whose effectuality depends upon his general nutrition.

There is too great a tendency in the treatment of typhoid fever to treat the intestinal lesion at the expense of the individual; or if not that, to make the temperature chart the sole arbiter of our practice.

The number of cases treated in the last three years has been thirty-one, and of these three died of whom not one was ever able to take solid food. No case was lost in which early feeding was adopted, and the mortality has not been so great as the average mortality of the hospital. True relapse occurred in two of the thirty-one cases. Although the number of cases is not large the results would seem to warrant a trial of this treatment by others.

Addison's Disease.— Bramwell (*British Medical Journal, Jan.* 2 and 9, 1897) considers three cases of this disease. In order to warrant a diagnosis three factors are necessary: (1) the presence of the characteristic constitutional symptoms, as asthenia, vomiting, pain in the abdomen and back, and in some cases marked emaciation, although this is the exception; (2) pigmentation of the skin, and especially pigmentation of the mucous membranes; (3) absence of any evidence of other local organic, visceral disease, as malignant disease of the stomach. The asthenia is most constant, though it varies considerably in degree, but it is never altogether absent, and is the first symptom of which the patient makes complaint. For a diagnosis the pigmentation, and especially that of the mucous membranes, is by far the most important sign of the disease. Discoloration of the skin *per se* does not warrant a diagnosis of Addison's disease. Pigmentation of the buccal mucous membrane is far more important. Few cases have been reported with pigmentation of the buccal mucous membrane in which the capsules were found to be healthy after death. One of the writer's cases improved upon the administration of sterilized suprarenal capsule juice. This patient died a year after the beginning of treatment from an attack of influenza, and at the necropsy both suprarenal capsules were absent, the right being entirely and the left almost entirely replaced by fat. He then takes up the consideration of the pathological physiology of Addison's Disease. In the great majority of cases both

suprarenal capsules have been found extensively diseased by a peculiar fibro-caseous change, tuberculous in nature. In a few cases they have been destroyed by malignant disease; in others, extremely rare, the lesion was a simple fibrous atrophy, and in still rarer cases the capsules have been apparently absent or replaced by fatty deposits, although in the vast majority of cases both capsules are affected, still there are some cases on record with the symptoms of the disease where only one capsule has been affected.

In most of the cases the nerves which pass between the capsules and the solar plexus are inflamed, degenerated or diseased, and in rare cases with at least some of the symptoms of Addison's disease, as pigmentation of the skin, the suprarenal capsules were healthy while the abdominal sympathetic was diseased.

The chief theories are: (1.) Arrest of the suprarenal function. (2.) The nervous theory. In favor of the first view are the facts: (*a*) that both capsules are destroyed in the vast majority of cases; (*b*) in some cases of simple atrophy or fatty change, with complete destruction of both suprarenal capsules, there was no lesion of the abdominal sympathetic, and (*c*) that in some cases the administration of suprarenal extract is undoubtedly beneficial. Against this view are: (*a*) that cancerous destruction of both capsules does not, except in very rare instances, produce the symptoms of Addison's disease; (*b*) there is strong pathological evidence in many cases to show that the suprarenal capsules have been completely destroyed before the symptoms of the disease were developed in a marked degree, and in many of these cases remarkable temporary improvement may occur. The nervous theory has the support of these facts: (*a*) the lesion is almost always the same — a tuberculous destruction of both capsules; (*b*) that cancerous destruction rarely produces the symptoms of the disease; (*c*) that in rare cases one capsule only, or a part of a capsule only, is involved; (*d*) that in almost all cases the nerves surrounding the capsule, and in many the semilunar ganglia and the large nerve cords of the solar plexus are imbedded in a highly irritative (tuberculous and inflammatory) tissue; (*e*) that in a considerable number of cases changes, macroscopical and microscopical, can be demonstrated in the semilunar ganglia and solar plexuses; and that according to Alezais and Arnand, microscopical alterations are always present in the peripheral ganglia; (*f*) that where the tuberculosis is limited to the center of the organ, and the pericapsular ganglia and abdominal sympathetic are healthy, the symptoms of Addison's disease are not developed; (*g*) that in a few rare cases of this disease the suprarenal capsules have been perfectly healthy while the semilunar plexus and solar ganglia have been diseased; (*h*) that in some cases of this disease no improvement has followed the administration of suprarenal extract.

Against this theory are: (*a*) that in many cases no changes have been found in the semilunar ganglia or solar plexus. The nerve fibers, however, in the immediate neighborhood of the capsules are probably always involved in the typical fibro-caseous lesion. (*b*) That simple atrophy and fatty destruction of the capsules (independently of any obvious nerve irritation) is occasionally the cause of the disease, and (*c*) that in some cases the administration of suprarenal extract produces a marked benefit.

Intramural Pregnancy.—Dr. Jacob von Rosenthal reports a case in the *Centralblatt fur Gynäkologie* (*December* 19, 1896.) Accepting the estimates of Schauta, Imidgrodzki, Schrenck, Martin and Lawson Tait, he finds forty cases in a total of 1,324 cases of extra-uterine pregnancy. He distinguishes between interstitial and intramural pregnancy, and repeats the four forms of pregnancy described by Dezeimeris as occurring in the uterine portion of the tube: (*a*) *Graviditas tubo-uterina interstitialis*, in which the ovum is developed in the uterine portion of the tube; it enlarges and lifts the parenchyma of the uterus conformably with its shape, but is always surrounded by the thin wall of the tube. (*b.*) *Graviditas utero-interstitialis*, in which the ovum leaves the tube, enters the uterine muscle, and is surrounded only by fibres of the latter. (*c*) *Graviditas tubo-uterina* in which the ovum develops in the mucosa of the tube, and in its development constantly approaches the uterine cavity; such a pregnancy is regarded by many writers as an irregular uterine pregnancy. (*d*) *Graviditas utero-tubo-abdominalis*, in which the placenta is in the uterus, the cord in the tube, and the fœtus in the abdominal cavity. Hennig insists that only cases in which one part of the ovum develops in the uterus, another part in the tube, are true cases of tubo-uterine pregnancy; but cases in which the ovum develops in the uterine portion of the tube, he designates as interstitial pregnancy, and those as intramural pregnancy in which one part of the ovum pushes through the tube and penetrates and pushes apart the muscular structure of the womb. Of the forty cases of interstitial pregnancy the writer finds only seven cases of the intramural form.

Bimanual examination of the writer's patient in chloroform anæsthesia revealed an enlarged uterus in anteversion, with cavity measuring 7 cm. The right and posterior vaginal fornix was free; in the left was felt a segment of the growth. The tumor could be pushed upward and to the right, toward which side it pushed the uterus. The tumor could not be separated from the uterus and gave the appearance of being united to it by a flat, broad, band-like, short handle; the movements included the uterus. Vaginal palpation revealed a hard body without certain fluctuation. Ectopic pregnancy was certain, and on account of the position of the tumor, of either the abdominal or intraligamentous form. Abdominal incision revealed a tumor the size of a man's head, of two parts, the lower a somewhat enlarged uterus, and the upper, the portal sac, lying upon the left and upper wall of the womb. The portal sac was so intimately united to the uterus that it was necessary to remove both together, which was accomplished by amputation of the cervix. The patient recovered nicely.

The writer concludes that operative interference is necessary when the diagnosis can be made, and questions the diagnosis in cases said to have resulted in the birth of the living child through the natural channel.

Ectopic Gestation.—Rutherford Morison reports three cases in the *British Gynæcological Journal for November*, 1896, in one of which diagnosis and successful removal were accomplished before rupture; in another diagnosis was made, but the sac ruptured into the peritoneum during the night preceding operation; and in the third there was rupture into the general peritoneal cavity,

with subsequent limitation of extravasation by adhesions. The summary of symptoms includes, usually, paroxysmal pain; sometimes, however, hæmorrhage first; a discharge of "skins" may follow. Paroxysmal pain and hæmorrhage continue to recur in varying degree, up to the time when in the natural course rupture takes place. Rupture of the tube may, however, be considerably delayed by the escape of the blood from the uterine end of the tube, or hastened by closure of the tube at both ends.

The signs of pregnancy may be present, such as milk in the breasts, pigmentation of the skin, etc. A tumor can generally be felt, either by abdominal palpation or vaginal examination, in the pelvis, separate from the uterus.

Pulsation of the uterine artery is not pathognomonic of pregnancy, for it occurs in fibroids. It has also been frequently found in cases of pyosalpinx, from which the differential diagnosis is hardest.

Early diagnosis of ectopic pregnancy is urgently necessary, and can only be made by careful inquiry into symptoms in conjunction with physical examination of the pelvic contents. But where a woman gives a history, either of sterility, or at all events a long interval since last pregnancy and present illness, of a sudden cessation of previously regular menstruation, coupled with paroxysmal pain and vaginal hæmorrhage, with or without passage of "skins," and on vaginal examination a tumor separate from the uterus is found, we may with almost positive certainty diagnose the presence of ectopic gestation.

Practical Therapeutics.

Camphoric Acid in Excessive Sweating. — Dr. Ralph Stackman (*Edinburgh Medical Journal*, January, 1897), has used camphoric acid for relief of hyperidrosis in phthisis, after influenza and in other cases in which there was certainly no tubercle, and in all of these doses of fifteen to thirty grains have given good or fairly satisfactory results. The night sweats of phthisis are often due to the occupancy by the patients of warm, ill-ventilated rooms. Under more hygienic conditions, and in cool, well-ventilated rooms, this symptom frequently disappears without any special treatment. In a certain number of cases it persists, and is usually more or less amenable to belladonna, zinc, agaricin or picrotoxin. These drugs may after a time lose effect, and camphoric acid may be substituted, and has been found to act as efficiently as atropine. The best plan of administration is to give thirty grains at night two or three hours before the sweating is expected, or it may be given in two doses at short intervals. It is most acceptably given in powder, or in capsules or cachets, as the alcoholic solution is very bitter. Owing to its insolubility, it is only slowly absorbed from the intestinal canal, and for this reason must be given some time before the expected sweating. The only unpleasant effect noted by Dr. Stockman was slight irritation of the stomach, but it is said to cause renal irritation, and in one case was apparently the cause of a skin eruption.

A New Treatment for Carcinoma.— Denissenko (*Wratsch, September*, 1896) recommends the extract of the fresh plant chelidonium in carcinoma. He prescribes one to five grains of the aqueous extract, to be taken daily, and at the same time injects near the tumor equal parts of the extract, glycerine and water, and as soon as the new growth ulcerates, he paints with a mixture of two parts of the extract and one of glycerine. The extract is usually well taken, but the injections produce a sensation of marked burning, with general weakness, chill and fever, 100°–102° F. The writer reports one of two cases of carcinoma of the lip, and one of epithelioma of the nose; marked improvement in two cases of carcinoma of the œsophagus; one of malignant growth of the right hypochondrium, and one of the neck. In these cases the diagnosis was based upon a microscopical examination. The writer advises that the extract be made fresh daily, or the addition of ½ per cent. chloroform as a preservative.

Creosote in the Treatment of Pleuro-Peritoneal Tuberculosis in Children.— In *The Lancet* (*January* 16, 1897), Professor Thoma describes two cases treated by enemata of creosote. The enema was given each evening when the child was quiet and before putting the patient to bed. At first the child could not retain the enema more than three or four hours, but after some days the child slept well, and on many occasions only a little oil was found in the morning along with the first motion of the bowels. Professor Thoma prefers cod-liver oil with creosote. At the outset each enema contained 150 grammes of emulsified oil and 0.5 gramme of creosote, but after from eight to ten days he gave one gramme of creosote. In the first case diarrhœa ensued, and the treatment had to be discontinued. It was resumed afterward, and the child improved. After the treatment has been continued for some weeks, it is a good plan to suspend it for five or six days and begin again. The antiseptic action of creosote is valuable against intestinal fermentations. The absorption of the creosote was unquestionable, for on many occasions the urine was dark colored. Other customary applications to the abdomen may be made in connection with the creosote treatment.

Phenocoll Hydrochloride.— Ohly (*Therapeutische Monatshefte, December*, 1896) treated sixteen cases of acute articular rheumatism with phenocoll hydrochloride. In three cases the result was valueless, while in the remainder the treatment was most satisfactory. The drug was given in doses of fifteen grains, three times a day. On the average, after nine doses there was abatement of the pain, and after twenty-one doses complete recovery. After abatement of the pain the drug should be continued for some days in diminished doses.

Taka-Diastase.— Professor Leo (*Therapeutische Monatshefte, December*, 1896) praises highly the use of Taka-Diastase, in the following conditions: When the saliva is diminished in quantity, as in the early months of childhood, at which period it may be desirable to administer starches, *e. g.*, for diarrhœa; in febrile conditions, diabetes, contracted kidney, and severe diarrhœas. It is also of value in gastric hyperacidity and ulcer. It frequently corrects the constipation commonly seen with hyperacidity.

The Treatment of Typhoid by "Internal Baths."— Duchenne (*Sociêtê de Therapeutique, October*, 1896) advocates the administration of large quantities of fluids, three to three and a half quarts of milk or other fluid, daily, in typhoid. This drainage of the body washes out the toxic products and favors oxidation. Every patient should receive as much fluid as he will take.

Chapped Hands and Face and Sore Nipples.— The following is highly recommended:

℞ Tinct. benzoin comp. m x.
Alcohol, f ʒ ij.
Aquæ rosæ, f ʒ ss.
Glycerin, f ʒ i.

M. et Sig: Apply to chapped surfaces at night, after washing with soap and water, and carefully drying. — *The Practitioner.*

Bronchitis.—

℞ Acid. benzoici, gr. ix.
Tannin, gr. iv ss.

M. Divide into forty powders. Sig: Four powders to be taken daily.
—*Prof. Maragliano.*

Acne Pustules.— Von Hebra and Ullmann recommend the following ointment in cases of acne where the pustules are unusually large:

℞ Ichthyol.
Bismuth subnitrat.
Hydrarg. ammonia. āā part. j.
Ung. petrolei, part. x.

M. et Sig: Apply at night.

Natrium Sulfuricum as a Hæmostatic.— Reverdin (Tenth French Surgical Congress) advises in capillary hemorrhage this preparation in small doses (.1 grain) hourly.

Iodine in Tetanic Uterine Contractions.—

℞ Tinct. iodi, 1.
Alcohol, 2.

M. Sig: Five drops in a half glass of hot water every half hour.
—*P. Müller.*

Cough Mixture.—

℞ Ext. pruni Virgin. f ʒ j.
Aq. camphor. f ʒ vij.
Glycerin. f ʒ j.

M. et Sig. Teaspoonful every two to four hours.
—*Dr. B. F. Sherman.*

Tannigen.— Wirz (*Therapeutische Monatshefte, December*, 1896,) has had success from the administration of tannigen in all kinds of diarrhœas. It operates especially well in acute diarrhœas, and often its action appears in ten or fifteen minutes. In children it is of striking value, and may be combined with somatose and Tokay wine.

Collodion in Pruritus Ani and Hemorrhoids.— Samways (*British Medical Journal, November* 21, 1896) praises the use of common collodion in these conditions. A few drops are soaked upon cotton, which is placed every morning after defæcation in the anus.

Amylene Hydrate in Diabetes Insipidus.— Brackman (*Therapeutische Monatshefte, December*, 1896) obtained a very striking result from the administration of amylene hydrate, in an evening dose of thirty grains, in a case of diabetes insipidus.

Book Reviews.

Essentials of Physical Diagnosis of the Thorax. By ARTHUR M. CORWIN, A. M., M. D., Demonstrator of Physical Diagnosis in Rush Medical College, etc. 2d edition, revised and enlarged. Pages 193. Philadelphia. W. B. Saunders.

It is a great surprise in these days of encyclopædic medical treatises to see a small medical work, and pleasure is added to surprise when the thoroughness of the present volume is appreciated. The present work is designed for students pursuing a course in physical diagnosis, and as such is an almost ideal book. From the teachers' standpoint, however, one or two suggestions might be made — that the physiology and anatomy of the heart and lungs be considered separately, with their respective affections, rather than together, thus producing inevitably some confusion, and that the common conditions be made more prominent, and the unusual much less prominent. There is too great a danger at the present time that writers of books for students will, through fear of being thought wanting in thoroughness, make their work altogether too complete, and will place too much emphasis upon conditions which are clinical curiosities, rather than practical problems, which the student will have to face.

With these slight changes, the present work should receive a favorable reception from every class in physical diagnosis.

Leprosy and the Christian Church. By REV. L. W. MULHANE. Pages 155. Chicago and New York. D. H. McBride & Co.

This small work is the outgrowth of a pamphlet which, issued about a year ago, received very favorable notice. The present volume gives interestingly the history of leprosy in ancient times, the middle ages and at the present day, pointing out the various countries where lepers abound, and mentioning the provision made for their care. The writer has, from his study and experience, become so imbued with the frightfulness and contagiousness of the disease, that he adopts alarmist views in regard to its extension. The fact that Helra and Virschou occur in the same sentence for Hebra and Virchow, is probably due to the author's want of familiarity with medical names, but the use of Tiberias for the Emperor Tiberius cannot have the same excuse.

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Original Communications.

A DISCUSSION

ON THE

RELATION OF IMPURE WATER TO DISEASE AND THE CURE AND PREVENTION OF THE LATTER,

HELD AT THE ANNUAL MEETING

OF THE

MEDICAL SOCIETY OF THE STATE OF NEW YORK,

JANUARY 28, 1897.

ORGANIZED BY HENRY HUN, M. D., ALBANY, N. Y.

INTRODUCTION.

BY HENRY HUN, M. D.,

Albany, N. Y.

When the President of the Medical Society of the State of New York, Dr. Spencer, requested me to organize a discussion to be held at the annual meeting of the society in 1897, no topic appeared to be more opportune than the relationship of contaminated water to disease. A great deal of investigation had been made on this subject during the past twenty years, and many important facts concerning it had been established on a firm basis; if in a series of brief, practical papers, written by men actively engaged in research and study, these established facts could be plainly presented to physicians from all parts of the State at the annual meeting of its legal and representative Medical Society, it seemed likely that good would result.

In such a discussion, the first question presenting itself must be: What diseases can be directly traced to contaminated water, either used as drinking water or in other domestic uses? And next would naturally present themselves the questions, how water becomes contaminated, how this contamination can be prevented, and how contaminated water may best be purified. Within the limits of these questions the discussion might well have been confined, but in that case its interest would have been restricted mainly to bacteriologists, health officers and sanitarians. The membership of the State Society consists mainly of practicing physicians engaged in the routine work of their profession, and, to awaken a more general interest, it seemed wise to add some consideration of the most important disease caused by contaminated water — typhoid fever. For this reason, topics on the life history of the typhoid germ outside the body, the importance and practical methods of disinfection of excreta of typhoid patients, and some points in the treatment of the fever, were added. Finally, the discussion was completed by a consideration of the bacteriological diagnosis of typhoid fever, in which during the past year most substantial progress has been made, and by a discussion on the occurrence of typhoid fever in young children, in regard to which much difference of opinion exists at the present time.

It speaks well for the earnest zeal of the medical profession in the State that, almost without exception, every one whose co-operation in this discussion was requested willingly undertook the labor of preparing the respective papers, for which I return them my most hearty thanks, and I am greatly pleased that the papers can be published together in one number of this journal, and be distributed very widely among sanitarians and others interested in this subject. There are few cities in this State and country in which the water supply is not a subject of anxious consideration; the rapid increase in population having rendered older and simple methods of procuring this supply dangerous. It is to be hoped that this discussion may be of service in helping to solve some of these problems, and, where they are badly solved, in helping to restore those suffering from typhoid fever to health, and in preventing the spread of this common but preventable disease.

I. COMMON CAUSES OF THE CONTAMINATION OF DRINKING WATER.

BY TIMOTHY MATLACK CHEESMAN, M. D.,

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Water is a transparent, inodorous, tasteless fluid, composed of hydrogen and oxygen.

All water found in or upon the crust of the earth is derived from the watery vapor of the atmosphere. This vapor becomes condensed, and falling to the earth, a certain portion of it moistens the soil and sinks into it some depth, following the spaces between the small grains of which the surface layers of soil are composed, and when these interstices become filled up a considerable amount of the precipitated moisture runs off from the puddles which collect here and there, through little rivulets formed by the force of the water, and seeks some lower level where it can soak into other soil; or it reaches some water-course and is carried by the brooks, creeks and rivers out into the sea.

It has been estimated that only about two-thirds of the water which falls during a shower or rain-storm follows the course that has been indicated here; the remaining one-third is soon taken up by the atmosphere again in the form of watery vapor. This moisture mingles with the large mass of watery vapor derived from the ocean and in due time is again precipitated in the form of rain, snow, hail, frost and dew.

As is well known, the atmosphere is a mechanical mixture of gases, nitrogen and oxygen being normally present in fixed proportions; and other gases, such as carbon dioxide, ammonia, ozone, etc., are found in varying amounts. In this aëriform fluid which surrounds the earth is also found a large quantity of dust.

Dust is organic or inorganic matter so finely divided that it may be caught up and carried by a gentle wind, and is largely a product of human activity. It is derived almost exclusively from waste substances, and for this reason cannot always be looked upon as harmless.

Now, when the moisture in the air is condensed into water, it takes up in solution certain of the gases from the atmosphere, and in its rapid fall to the earth drags down many of the minute suspended

particles of matter, *i. e.*, dust, with which it comes in contact. On reaching the surface of the earth it again becomes mixed with other organic and inorganic matters which are found there, part of which it takes up in solution and part it carries along with it in suspension. The action of this water as a solvent for many of the substances with which it comes in contact is greatly increased by its holding certain gases in solution, and if we could accurately trace the wanderings of the water which falls in a summer shower and follow the chemical changes which it undergoes, here dissolving compounds with which it comes in contact, and there precipitating compounds which it has formed, we would doubtless have a much better understanding of the composition of many of our water supplies.

Many of the suspended matters carried along by waters which course upon the surface may become water-soaked and sink ; others again are thrown upon the shores by the current, or driven there by the wind, and are thus removed from the water, or may, if small and buoyant, remain suspended in the water for an indefinite time and be carried almost any distance.

The water which sinks into the soil also takes up many substances in suspension and in solution. The larger of the suspended matters are removed mechanically, and the smaller, even the very smallest, are gotten rid of by filtration, and cling to the slimy film which forms upon the little grains which compose the surface soil. The chemical composition of the water is also changed materially as it penetrates the soil, partly through the action of bacteria, which seize upon certain of the chemical elements in the compounds which are dissolved in the water, and partly by the solution of compounds which it is capable of taking up.

We have, then, two kinds of water to consider — the surface water, or that which is found upon the surface and which runs in brooks, streams and rivers or is confined in hollows, forming ponds and lakes ; and the ground water, or that which enters the soil, sinking deeper through the pores, or along fissures and faults of the more superficial of the earth's crust until it is stayed by meeting some impermeable stratum of rock or clay. Here it rests, forming bodies of water of greater or less extent, which correspond to the lakes and ponds on the surface, and these often communicate with each other through underground streams and break upon the surface as springs.

The composition of these waters usually differs very considerably. Surface waters, coming in contact with fewer of the mineral ingre-

dients of the soil, are apt to be more free from mineral matters in solution than are the ground waters, and it is on this account that a soft water is more likely to be found among the surface waters, and a hard water among the ground waters. Surface waters, on the other hand, are more likely to contain suspended matters than are the ground waters, because from these latter even the smallest particles are removed by proper filtration through the soil.

It is usually not a particularly difficult matter to find out by chemical analysis the kinds of substances which are in solution and their amounts, and from the results obtained to determine whether or not the water under consideration holds in solution anything which is poisonous.

After this determination has been made, it becomes most important to discover whether harm can come from any of the particles which are in suspension, and this is a most difficult thing to do. Suspended matters which are not living there seems to be no cause to fear, but we know surely that there exist among the smallest living things of which we have any knowledge certain plants and animals, called germs, microbes, or micro-organisms, which, entering the animal body, may multiply there, and in one way and another give rise to disturbances of the normal functions and produce disease.

The forms of micro-organisms whose life history we understand the best are the bacteria, which are classed among the microscopic plants, and from the study of the bacteria it has been learned that certain of those which are capable of producing disease, *i. e.*, the pathogenic species, may live for long periods of time and, under certain conditions, multiply enormously in water. Further, there is good reason for believing that these pathogenic bacteria to which we refer have no normal habitat in water or in soil, but are derived solely from the bodies of those suffering from the disease in question. These bacteria may be present in any of the body excretions, but are found most surely and most abundantly in the bowel discharges.

There seems to be abundant ocular demonstration of the fact that many otherwise potable waters are sewage polluted, and it does not require a great stretch of the imagination to believe that at times some of the sewage poured into the water may contain the undisinfected discharges from patients suffering from one or other of the infectious diseases which are caused by certain of these bacteria.

As yet, no practical analysis or test has been devised by which

pathogenic bacteria can be surely detected when present in water or sewage.

Chemic analysis of water does not assume to help in isolating or identifying any kind of bacteria. For this purpose the methods used for the study of the bacteria must be employed, and the enormous number of species found, the numerous and tedious tests required for the identification of any species, and the improbability of finding, in a living condition, the particular pathogenic species sought for, in the minute quantity of the sample which can be used for this analysis, render the search for pathogenic bacteria in water or in sewage almost a hopeless one in the beginning, and usually a fruitless one in the end.

I think it is pretty well established that water derived from uninhabited regions is harmless, so far as the presence of pathogenic bacteria is concerned, and it is only a water which has become infected, either directly or indirectly, with micro-organisms derived from the bodies of those suffering from infectious disease that we have any cause to fear.

Now, since it seems to be proven that the great majority of pathogenic bacteria which are likely to be water carried are voided from the system with the bowel discharges, and these discharges are found most commonly in sewage, it is a sewage-polluted water that is most likely to be the carrier of infection.

It is not to be supposed for an instant that any water, however contaminated it may be, or even sewage itself, is teeming with pathogenic bacteria. The pathogenic organisms are to be found only in very inconsiderable numbers compared with the other bacteria which may be present, and gallon after gallon of the infected water may be drawn and used, which is entirely free from the danger which may be present in the cup of water we drink. Drinking diluted sewage is by no means necessarily harmful, but certainly it is fraught with danger because of its liability to contain germs of disease.

In inhabited regions, surface waters and the more superficial of the ground waters, such as are found in shallow wells, are usually exposed, in a greater or less degree, to sewage contamination, either through ignorance or carelessness of the inhabitants or their wanton neglect of certain of the most obvious rules of sanitary science.

The improper disposal of sewage, whether by emptying it into streams, or hiding it in cesspools, practices which may be observed

among refined and civilized people, which seem to have as their aim the removal of the effete products of human life from the vicinity of their begetting, no matter what may become of them, are definite sources of danger to the public health.

In many localities this improper disposal of sewage seems to be the rule, rather than an exception, and I am, therefore, convinced that unpurified waters from the neighborhood of populated districts are to be looked upon with suspicion.

If we suppose that a water has been obtained which has thus far safely run the gauntlet of infection, or a water that has been adequately purified, it is not at all impossible that it may become seriously contaminated before it reaches the consumer.

As we well know, for convenience, water is stored in small bulk, to be drawn upon when needed. The cisterns or tanks used for storage are often made of some indestructible material, such as iron, which is not infrequently galvanized to prevent rust, or of copper, which may be tinned to avoid its corrosion, or of lead, which often is not lined at all, and the inlet and outlet pipes are frequently made of lead, and minute quantities of these metals may be dissolved by the water and cause acute or chronic mineral poisoning.

These dangers, however, are usually transitory, as a scum of vegetable growth soon forms upon the surfaces of the tanks and pipes in which water is confined, and thus prevents the water from coming in contact with or acting upon the metals.

A much greater source of danger comes from the presence of organic matter in the cistern, matter which is present in almost every water-supply at some seasons of the year, and which is carried in suspension in the water, settles to the bottom of the tank and there remains as a food supply for the bacteria. Many of the saprophytic bacteria are very hardy and can live and multiply under conditions which would be impossible for the more vulnerable pathogenic species, but under favorable conditions of temperature, protected from light, abundantly supplied with air and in a fluid charged with organic matter, even pathogenic bacteria will multiply enormously. These conditions are to be found in many of the tanks which supply our houses, many of them may not have been cleaned out for years, others more or less thoroughly cleaned once a year, and then, perhaps, only under protest, by order of the health authorities. Such tanks are often built so that it is impossible to clean them properly, and some are so placed that it is next to impossible to get at them to clean them at all.

The presence of a single pathogenic micro-organism in such a cistern might result in its active multiplication and in a serious outbreak of disease.

Water-coolers are cisterns on a smaller scale, but are much more liable to infection from sources outside of the water itself, as they require to be filled more often.

The frequent draught upon a water-cooler, which may be observed, for instance, in a railroad car on a warm summer day, soon results in its exhaustion. If a new supply is called for, the accommodating brakeman may, at some station, obtain it from an unusual source and fill the cooler with water, the purity of which he does not know and perhaps does not consider, carrying it in a bucket the cleanliness of which he has not time to discover. The cleanliness of the cooler itself is a very important matter. It is possible that, although these receptacles are frequently emptied, they may seldom be thoroughly cleansed, and if this be so, the slimy vegetable coating which lines it may prove a lodging place for any infectious material which has entered it, and will supply the nutriment which will enable it to produce many generations of its kind.

Dirty hands, the use of dirty cloths or receptacles for carrying or storing the water or the ice, ice which has in one way or another become infected, and sometimes even dust, may prove serious sources of danger in contaminating a water which has previously been most carefully purified.

My experience teaches me that the danger from infected hands is a very real one, as on three or four occasions I have isolated the B. coli communis, an organism found normally in the intestinal discharges of man, from bits of epidermis scraped from the fingers. These organisms are not pathogenic, but they were in all probability obtained from contact with the dejecta, a source from which bacteria which may produce disease are often derived.

Ice formed from sewage-polluted water is a well known source of danger, and even artificial ice is not always entirely safe, requiring human interference in its preparation, as I had the opportunity on one occasion to observe, while trying to demonstrate the relative purity of clear artificial ice. One of the plates under examination contained so many colonies of one particular kind that I had the organism carefully studied, and found that it corresponded biologically with the staphylococcus pyogenes aureus. This organism was lost before its pathogenic properties were determined, but there is no

doubt in my mind of its identity with the golden pus coccus. My explanation of its presence in the ice is that the cans were handled by someone having a suppurating wound, and thus caused the infection.

Although there are many sources of contamination, which can only be suggested here, which may lead to the infection of water with pathogenic bacteria, I am not unmindful of the fact that there are ways in which most of these dangers may be avoided. It is most important to obtain a full knowledge of the dangers that exist, and then by the exercise of an intelligent vigilance to avoid them.

46 EAST 29TH STREET.

II. DISEASES WHICH CAN BE DIRECTLY TRACED TO CONTAMINATED DRINKING WATER.

BY GEORGE BLUMER, M. D.,

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In order to prove with certainty that a given disease can be, or in a given instance is, caused by drinking water, we must bring evidence to bear out the following postulates:

1. That the cause of the disease can be isolated from the water.

2. That the great majority of the individuals attacked by the disease partook of the water.

3. That there is no other source of infection common to all the individuals attcaked.

Points not absolutely necessary for proof, but strongly bearing on its probability, can be added to these postulates. The discovery that the suspected water had actually been exposed to contamination from the given disease shortly before an epidemic would be one of these. The fact that individuals who were not exposed to the suspected water escaped infection is, of course, implied in the second postulate. The diseases which are under discussion are those which it is generally assumed can be carried by contaminated water. Some of them, you will find, will stand the test of the above postulates, others will not. All of the diseases can come under one of two main categories; either they are caused by mineral contaminations, or they are the result of the presence of living organisms.

The diseases caused by mineral contamination are of such infrequent occurrence in this country, and of such secondary importance,

that they will be merely touched upon. It is hardly necessary to say that they stand the test of rigid investigation, as the substances causing them are almost all easily detected by chemical examination, even in very small quantities, and hence they are found with ease, both in the contaminated water supply and the affected individuals.

By far the most common mineral contamination of drinking water is lead. It is particularly apt to contaminate the water in regions where this passes through peaty soils, and absorbs acids therefrom, but may occur as the result of any acid water acting upon lead water pipes, and forming salts of lead. A number of epidemics of water-born lead poisoning have occurred, the most extensive being that mentioned by Oliver, in which over 600 individuals were affected. Other harmful mineral substances are very rarely found as a contamination of drinking water, though it is interesting to note that certain spring waters contain such large quantities of sulphate of magnesia and soda that they have given rise to epidemics of diarrhoea.

The diseases due to water contaminated by living organisms can be again subdivided into those caused by animal and those caused by vegetable organisms. Under the first heading come the two diseases malaria and amœbic dysentery. At the very outset we find that in these diseases we cannot prove the first postulate; we cannot isolate either the cause of malaria, or the cause of amœbic dysentery from drinking water; and further than this, we do not know the natural habitat of either of the organisms. It is unnecessary to state that there are many who believe in the water-borne origin of malaria,* and, indeed, a casual examination of the literature on this subject would lead one to believe that the disease is frequently transmitted in this way. Close study of the literature, however, shows that there is but little reliable evidence in favor of it, and much against it. Aside from the fact above stated, that we do not know the natural habitat of the malarial organism, we find that for this disease there is another infective factor besides water, which is common to all exposed, and that is air. A further hindrance to the clearing up of the subject is the fact that in the great majority of reported instances of water-borne malaria, no satisfactory differentiation is made between malaria and typhoid fever, and, in fact, many of the reported cases give to the unbiased mind the impression that they

*I am indebted for much of the above information concerning malaria to the editor of the *Johns Hopkins Hospital Bulletin*, who kindly allowed me to have the advance sheets of an article by Dr. Rupert Norton, of Washington, D. C., "Is Malaria a Water-borne Disease?"

are typhoid rather than malaria. The outbreak of malaria which is almost always cited as the one which proves most conclusively that the disease can be water-born is that which occurred on the ship "Argo." The epidemic in question occurred in a band of soldiers being carried on the ship between Algeria and Marseilles. In the short voyage between the two points, 13 out of 120 soldiers died, and on arrival 90 men were brought ashore sick, showing, according to Boudin, who reported the epidemic, marked symptoms of malarial intoxication in all its forms. The sailors on the same ship were absolutely free from disease, and on investigation it was found that whilst the sailors were using pure drinking water, the soldiers were using some water which had been taken from a well, in a marshy district, just before the sailing of the ship. The reporter naturally concluded that the water in this instance was the infecting agent. The weak points in the story are, first, that no mention is made of the length of the voyage, so that we get no idea of the duration of the attacks of fever; second, that it is not stated whether the soldiers went ashore at Boné, where the marsh water was procured. Moreover, the report states that many of the attacks of fever were continuous and were not influenced by quinine, and furthermore, the author himself states that his evidence is not conclusive. If this is the most conclusive report in favor of the water-born origin of malaria, what must we say of the other less conclusive ones? The facts against the transmission of malaria by water are, on the other hand, quite conclusive. Celli, a well-known Italian observer, gave healthy individuals large quantities of water from the Pontine marshes, which are acknowledged malaria-breeding grounds, and in no case did malaria result. Another Italian observer, Salamone-Marino, gave 5 to 24 litres of marsh water from a malarious country daily, for from 6 to 24 days, and did not succeed in a single instance in producing malaria. Moreover, it has been frequently noted that persons may live in a malarious district and drink pure water, and yet have malaria, whilst others in the same district may drink marsh water and have no malaria.

The evidence of water transmission in amœbic dysentery is almost as unsatisfactory as in malaria, but here the probabilities are in favor of a drinking water origin. Almost all the writers on the subject accord to impure water the chief role in its causation, though the only striking instance of a water epidemic is that mentioned by Quincke and Roos, in which 15 individuals were all taken with

dysentery after drinking from a siphon of artificial mineral water, amœbæ being found in the stools of one of them, who became the patient of these observers.

The diseases which have been most conclusively proven to be due to water infection belong to that class due to vegetable organisms, and are typhoid fever, cholera Asiatica, and certain diarrhœal diseases. Whilst not by any means holding that these diseases are always water-borne, we think that the evidence that they may be thus transmitted is absolutely conclusive.

With regard to typhoid fever, we meet with a stumbling block only in the proving of our postulate that the cause of the disease can be isolated from the water. This failure to isolate the typhoid bacillus from water is, however, due to certain biological peculiarities, for we know that the organism is capable of existing in water for some time. The researches of Grimbert and others have shown that, if a large quantity of a pure culture of the typhoid bacillus be placed in a flask of sterile water together with a relatively small quantity of a pure culture of the bacillus coli communis, at the end of a comparatively short time, varying from 24 to 48 hours, no typhoid bacilli can be isolated, they having been overgrown by the colon bacilli. It is this fact which acccounts for the observation, easily made, that in practically no well authenticated instance has the typhoid bacillus been isolated from contaminated water by competent observers in the last few years. The colon bacillus, being a normal inhabitant of feces, is, of course, discharged into the water with the typhoid in all cases of sewage contamination, and hence the difficulty in isolating the latter organism. The other postulates demanded as a proof of water transmission have been easily complied with in scores of typhoid epidemics, but only one such will be related. Perhaps one of the most striking examples of a water-borne typhoid epidemic was that which occurred in the Tees Valley in 1890–'91. This valley contains a population of about half a million people, the number being distributed about equally between the country districts and three large cities, which were the seat of the epidemic. The cities procured their water supply from the river Tees, the country districts from wells and smaller streams. The outbreak took the form of two distinct epidemics, each lasting about six weeks, and separated from one another by an interval of about six weeks. In the two outbreaks 1,463 cases occurred, 91 per cent. occurring in the three cities, and 9 per cent., some of which

were doubtless contracted in the cities, occurring in the country districts. The only possible contaminating agent common to all the cities, which lay at some distance from one another, was the drinking water, which came from the river. Investigation showed that this was exposed to all sorts of sewage contamination from towns and villages lying above the intakes of the cities. Moreover, it was shown that each of the two outbreaks reached its maximum just two weeks after a severe flood, showing that in all probability the direct cause of the outbreak was the sudden washing into the river of large quantities of refuse material.

Numerous other epidemics of water-borne typhoid might be cited occurring in this country and elsewhere, did time permit, and many of them as conclusive as the one just mentioned.

The disease which, as far as our postulates are concerned, can be most easily proven to be water-borne in many instances, is cholera Asiatica. Practically all of the violent and sudden outbreaks of this disease have had contaminated water for their origin, though it is admitted by all that, after the epidemic is under way, this is not the only means of spread.

Probably the most typical example of a water epidemic which has ever been published is that of the Hamburg cholera outbreak, so clearly described by Koch. The city of Hamburg has immediately adjacent to it two smaller cities, which, though continuous with it, have different water supplies. One of these is Wandsbeck, which is supplied with filtered lake water. The other is Altona, which receives filtered water from the Elbe below Hamburg. Hamburg itself, at the time of the epidemic, was supplied with unfiltered water from the Elbe, the intake lying just above the town. At the time of the epidemic mentioned, Hamburg was mainly attacked, the cities of Wandsbeck and Altona scarcely suffering at all, although under exactly the same conditions as Hamburg, except where water supply was concerned. The most striking results of the epidemic were seen where the cities of Hamburg and Altona joined. At this point there is a street, one side of which is supplied by Hamburg water, the other by Altona water. On the Hamburg side of the street there were many cases of cholera; on the Altona side none at all. Another striking fact was, that a group of houses in Hamburg, in a densely populated district, but supplied with Altona water, absolutely escaped; those about them, supplied by Hamburg water, being full of cholera cases. What makes the epidemic more instructive is the

fact that while the Hamburg people were drinking an unfiltered river water, which was apparently but slightly contaminated, the Altona people were drinking the same water, plus the entire sewage of Hamburg, during the whole epidemic, and yet escaped unharmed because their water was filtered.

While in this epidemic the cholera spirillum was not isolated from the water, yet numerous instances could be cited in which it was isolated in similar epidemics, and all the postulates of proof fulfilled. Such was the case in the epidemic at the Nietleben asylum described by Koch, and such was the case in a well epidemic which subsequently occurred in Altona.

Instances in which diarrhœal diseases, other than true cholera, have been traced to contaminated drinking water are very common. A well-marked example of such an epidemic is the so-called "block" epidemic, which occurred in Melbourne in 1892. In the last ten days of November of that year 50 per cent. of the individuals living in a certain block of houses in that city, and using tap water for drinking purposes, were taken with severe diarrhœa, with purging and passage of bloody stools. No other portion of the city was attacked, and in certain of the individuals who resided in the affected block, but used boiled water, only 1 per cent. were attacked. The outbreak was shown to be due to the cleaning of the water pipes supplying the block, during which cleaning a certain amount of foul liquid mud had been allowed to leak into the supply pipe by means of a defective valve. The bacteria causing diarrhœal diseases are certainly not constant, and are not yet thoroughly known, so that the isolation of a single characteristic organism from the water in all cases of water-borne diarrhœa could not be expected. Nevertheless there are numerous instances in which there have been found in drinking water bacteria which have been described as causing diarrhœa, particularly the organisms belonging to the colon group. In conclusion, it may be said that we have certain proof that Asiatic cholera, typhoid fever, certain diarrhœas and some forms of mineral poisoning may be carried by means of drinking water, probable proof that amœbic dysentery is carried in this way, and probable proof that malaria is not carried by drinking water in the great majority of instances. The deductions to be drawn from such conclusions are apparent to all, and may be briefly summed up in the statement that, if we do not have pure drinking water, we cannot expect a healthy community.

14 JAY STREET.

III. A STATISTICAL INQUIRY INTO THE RELATION BETWEEN CONTAMINATED DRINKING WATER AND TYPHOID FEVER.

BY JOHN S. BILLINGS, JR., M. D.,
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A statistical inquiry into the relation between contaminated drinking water and typhoid fever, must be based mainly upon comparisons of death rates either of different cities, or of the same city at different times, with the character of the drinking water used, during or just prior to the periods for which the death rates are given.

It is difficult for one unfamiliar with the subject to realize the obstacles in the way of obtaining satisfactory statistics. Exact statistics on such a subject as the present one, are impossible to obtain. In most cases our results are only probable, and any conclusions drawn therefrom are only probabilities. It is in instituting comparisons that statistics are most valuable. As an absolute statement of fact, they are not to be relied upon; as a means of comparing two things, they are of great value and are also valuable as a means of obtaining averages.

In the statistics furnished by the various large cities we have to content ourselves with a knowledge of the number of deaths from typhoid fever monthly or annually. Of course, this gives no exact idea of the number of cases, as the mortality for different epidemics varies widely. But the relation of the number of cases to the number of deaths, in those large cities where the death rate from typhoid fever varies but little every year, is fairly constant, and we are justified in drawing conclusions from the death rates as to the relative prevalence of this disease.

In order to determine whether typhoid fever prevailing in a given locality is due to contaminated drinking water or not, we should first know whether the water is contaminated. The only sure means of determining this is, of course, a bacteriological examination of the suspected water for the typhoid bacillus. This is a tedious and difficult process, however, and is not regularly carried out by any of the boards of health of the various cities. They content themselves with a chemical examination of the water, the presence of certain abnormal constituents (the nitrites, etc.,) being taken as evidence of organic life and condemning the water as unfit for drinking purposes.

The fact of typhoid fever having a relatively long incubation period must also be taken into consideration, for by the time the disease manifests itself, the contamination of the water may have disappeared. This was well shown in Buffalo, where the supply of pure water running short, ordinary lake water was turned into the city water pipes for a short time. The number of cases of typhoid fever rose markedly about two weeks later, but by that time the water was perfectly pure again.

As a matter of fact, we have usually to content ourselves with showing that there is abundant opportunity for the drinking water of a given locality to become contaminated, and that when such contamination is prevented, the death rate from typhoid fever is markedly lowered.

Typhoid fever is a disease affecting by preference individuals of certain ages. In the United States census for 1890, the death rate from this cause was greatest among persons from 15 to 25 years of age. (78.69 per 10,000 of population.) So that in estimating the prevalence of typhoid fever in a given locality, we should know not only the total population of that locality, but also what number of that population fall into the different age groups; that is, whether there is a relatively large or small proportion of young adults in the community. Now it is only in the census year (once every ten years) that we can know the number of individuals in each age group for any given locality. And as statistics on this point have only been collected once (in 1890), we have no means of estimating what the number would be in any one of the following nine years. So that we are compelled to use the population figures for one year, and the number of deaths for a different year in order to compute our death rates,— a method which is obviously unsatisfactory. For example, an annual death rate from typhoid fever of 14 per 10,000 of population in one of the long established New England cities, such as Lawrence, Mass., where the number of young adults is relatively small, would signify a much greater prevalence of the disease than a death rate twice as high in one of the younger western cities, such as Denver, where the great majority of the population are young adults, and therefore susceptible to the disease.

The question of race must also be considered. The United States census for 1890 shows that the annual death rate from typhoid fever was more than twice as great among the colored as among the whites (127.86 for the colored to 59.41 among the whites). The question here comes up as to whether this increased mortality is not due to

habits of life, uncleanliness, etc. These undoubtedly play a part, for one great cause of the spread of typhoid fever is lack of proper isolation of the sick, and disinfection of the excreta; precautions which the negroes as a rule neglect entirely.

Among the white races the disease seemed most fatal to those of Scandinavian and Italian birth, and least so to the German and English. The fact that change of locality and use of a different drinking water render individuals more susceptible to typhoid fever, may have some influence. During the Centennial Exposition in Philadelphia in 1876, the death rate from typhoid fever was almost double what it was in former years.

The Germans substitute beer for water as a beverage to a large extent. This may partly account for the relatively low death rate among them from typhoid fever.

Sex does not seem to exert any influence.

The geographical locality must also be considered. The United States census for 1890 showed that typhoid fever was most prevalent in the southern central Appalachian region, the middle west, the plains and on the Pacific coast. The relatively large proportion of negroes in the south, and of Scandinavians in the northwest must here be taken into account.

The season of the year and the character of the seasons have also to be considered. It is well known that typhoid fever is a disease of the spring and autumn, the months of August, September and October being those in which we would expect to find the highest mortality from this disease. The character of the preceding summer has a marked effect upon the number of cases the following autumn. This was well shown in the autumn of 1892, when the mortality from this disease was high all over the country as a result of the preceding hot, dry summer.

A very important factor to be considered in the estimation of the prevalence of typhoid fever, is the number of immune individuals; that is of individuals who have had the disease once and are protected against a second attack. The immunity conferred by an attack of typhoid fever, while not as absolute as in the case of scarlet fever, measles and one or two other diseases, does exist, and in the vast majority of cases, protects against a second attack. This is explanatory of the fact that epidemics do not occur in localities where the disease has prevailed extensively in former years, and yet where the circumstances are such that one would expect to find the disease widespread. When the supply of epinosic individuals (mean-

ing by the term those susceptible to the disease) is exhausted, the disease disappears until a sufficient number of persons have come, by birth or immigration, into a locality to furnish a fresh supply. The disease must have fuel or it burns itself out. To this fact is due a certain appearance of periodicity in epidemics; which periodicity was formerly attributed to meteorological influences and other strange causes. A locality with a population containing a relatively large number of immune individuals, may be badly sewered or may have a badly polluted water supply, and yet show a relatively low death rate from typhoid fever. The case of Lawrence and Denver, cited above under the head of "Age," is an example of this. This fact of immunity explains why the greatest number of cases and the greatest number of deaths are not found in the dirtiest and most unsanitary portions of the city which are occupied by the lowest classes; and also why the death rate among those classes of men whose work is such as to constantly expose them to infection, is relatively low; sewer men, night laborers, etc. These people are all immune, and so the main ravages of an epidemic are among the better classes.

The question as to how these statistics should be collected will not be entered into here; suffice it to say, that as far as they go, the means adopted in the various large cities are fairly satisfactory.

The chief causes underlying the spread of typhoid fever are:

1. Impure water supply.
2. Imperfect drainage of a polluted soil.
3. Lack of isolation and disinfection of excreta, etc.

Under 1, we can further subdivide the causes into (*a*) the use of water from polluted wells, (*b*) springs, (*c*) running water, (*d*) lake water and, finally, (*e*) contaminated milk. This last comes under the head of impure water supply, as the contamination is due to the water used in the various dairy processes of washing the cans, etc.

Owing to the short time at our disposal to-day, no attempt will be made to go into the history of any of the numerous epidemics, nor to speak of more than a few of the various cities, whose sanitary history furnishes evidence of the close connection between the character of the drinking water and the mortality from typhoid fever.

The statistics show that cities drawing their water supply from adjacent rivers have high death rates from typhoid fever. Among these may be mentioned Allegheny (11.23), Denver (21.7), Washington (4.6), Jersey City (7.6), and Philadelphia (4.08). All these death rates are per 10,000 of population, and this will be the standard used throughout the rest of this paper.

Newark and Chicago, as will be mentioned later, have both instituted improvements in their water supply. Previously they drew their water supply from the Passaic and Lake Michigan, respectively, and each showed a high death rate from typhoid fever.

Let us now consider more in detail the cases of some of the larger American and European cities.

The city of the United States showing the lowest death rate from typhoid fever during the census year, was Brooklyn. This city is remarkably well sewered and had, until the last few years, a most abundant supply of pure water. This was drawn from driven wells, and the filtration through successive layers of gravel and soil was supposed to insure a very pure water. Lately the supply shows signs of giving out, and there are also evidences that the filtering process is not working as well as might be desired. Brooklyn's death rate from typhoid fever for some years has been about 1.5. This is very low and compares most favorably with those of the large European cities where typhoid fever is now almost extinct.

New York has an abundant supply of good water, but is not well sewered. Its death rate from typhoid fever ranges at about 3. In its case we must take into account the relatively and absolutely large number of the floating and transient population. A considerable number of the cases of typhoid fever are undoubtedly contracted elsewhere, at health resorts, etc., and are brought to the city where they develop later.

In Boston, the sanitary condition of affairs is also good, the city being well sewered and having a good water supply. The death rate is about 3.5. Baltimore has a fairly good water supply, but its death rate from typhoid fever (5) is relatively high. As stated by Osler in his report on typhoid fever in Baltimore, it has practically only surface drainage. The excreta are received into privy pits, of which there are about 75,000 in the city. There must be leakage in a large number of cases with subsequent saturation of the ground about, and contamination of the rain water passing through such ground. This however, cannot be said to entirely account for the high death rate. There are a certain number of wells in the city from which dairies draw their water, and contamination of the well water from the polluted soil undoubtedly takes place. But the question of personal and domestic uncleanliness and lack of proper prophylaxis is an important factor. Previous to the introduction of the present fairly good water supply the death rate from typhoid fever was one-third more than it is at present.

Philadelphia gets its water from the Schuylkill river. The sewerage of the city is fairly good, so that the relatively high death rate from typhoid fever (3.24 to 4.08) may safely be ascribed to lack of purity in the water supply. The water is not filtered, as the authorities hoped that by allowing it to stand above a large dam, it would be purified by sedimentation.

Washington shows the highest death rate from typhoid fever of all the larger eastern cities (6.7). This is due chiefly to two causes. Though Washington has a fairly good water supply, drawn from the Potomac river some miles above the city, there are scattered throughout the city over two hundred wells, the water from which is used by the people around. The poorer classes prefer this to Potomac water. There are also a large number of box privies, such as was spoken of in the case of Baltimore; over 14,000 within the city limits. Finally the outlet of some of the sewers in the low lying parts of the city are below tide-water level, and the excreta, etc., are washed back and escape into the ground, soaking it and so contaminating the water of the various wells. So that we have almost an ideal condition of things to bring about a high mortality from typhoid fever. The only wonder is that it is not higher. In the admirable report of typhoid fever in the District of Columbia by a committee of the Medical Society of the District, all these points are brought out most clearly.

Chicago furnishes a good example of the close connection between polluted drinking water and typhoid fever. Previous to 1882 this city drew its drinking water from Lake Michigan. The intakes or cribs of the water system were close inshore and the water taken in was polluted by sewage from the Chicago river, which receives the sewage from the greater part of the city, and the Lake Shore conduits. The water was often so polluted as to be absolutely undrinkable, and so may even be said to have been less dangerous on that account. Whenever there was a heavy rainfall the sewage was washed down into the river and far out into the lake, and as a consequence the mortality from typhoid promptly rose. In June, 1892, there was a rainfall of 16.58 inches, and the number of deaths from typhoid fever leaped from 55 in June to 211 in July. Chicago is still supplied with water from Lake Michigan, but it is brought from far out in the lake by means of four four-mile tunnels. The two chief ones were completed in 1892. In 1892 there were 1,489 deaths from typhoid fever. In nine months of 1893 there were only 503 deaths, a reduction of over 60%. From January 1st, 1890, to De-

cember, 1892, the annual death rate was 11.5. In 1894 the death rate had fallen to 3.1, clearly showing the beneficial effects of purer water. Until 1892 Chicago had the highest annual death rate from typhoid fever of the seventeen principal cities of the United States. It is now only tenth.

An interesting instance of the effect of the purification of the water supply is shown in the cases of Jersey City and Newark, N. J. These two cities are practically under the same climatic and geographical conditions, being separated by the Jersey Meadows. Previous to April 15, 1893, both Jersey City and Newark took their water from the Passaic river, into which goes a great quantity of sewage. Up to that time the annual death rates from typhoid fever were as follows :

	1890.	1891.	1892.
Jersey City	9.1	9.5	5.3
Newark	6.0	8.1	4.5

In April, 1893, Newark began using Pequannock water from a water-shed unexposed to pollution, while Jersey City continued the use of Passaic water. A diminution in the death rate from typhoid fever to one-fifth of its former proportions took place in Newark, as shown below :

	1893.	1894.
Jersey City	6.0	7.6
Newark	2.8	1.5

The effect of filtration of the water supply upon the death rate from typhoid fever is well shown in the following table from the *Engineering Record* of October 27, 1894. It relates to the city of Lawrence, Mass., where typhoid fever is very prevalent. The filter was started in 1893, and by 1894 the death rate had fallen almost one-half :

	1890.	1891.	1892.	1893.	1894.
Population	44,654	45,911	47,204	48,355	49,900
Typhoid cases	193	207	172	141	101
Typhoid deaths	55	53	45	34	25
Death rate per 10,000	12.3	11.5	10.2	7.0	5.0

An abundant water supply alone, does not diminish the death rate from typhoid fever. This is shown in the case of Dantzic, a very badly sewered city, which in 1869 had an annual death rate from typhoid fever of 10. An abundant supply of pure water was introduced, but no marked reduction in the death rate occurred until the city was sewered in 1872, when it fell to 1.5.

New York has less than one-half the amount of water supply per capita than Washington and yet its death rate from typhoid fever is just one-half that of the latter city.

The experiences of other foreign cities furnish statistics going to prove the close relation of pure drinking water to the health of the community.

From 1841 to 1850, the decennium previous to the adoption of sand filtration for the purification of the Thames, Lea and New Rivers waters, the average annual death rate from typhoid fever in London, was 9.8. During the next ten years, which embraced eight to nine years use of the now well-known London filter beds, the death rate from typhoid fever was 8.7. That is, for the first decade during which the filters were in use the reduction of the mortality was about 14 per cent. For the decade 1871–1880, it dropped to 2.4, for that from 1881–1890, to 1.9, and for the past five years it has fallen as low as 1.4. This is a reduction in the death rate from typhoid fever alone of 86 per cent. since the introduction of the London filters.

In Munich, Vienna and Berlin, the death rates from typhoid fever are very low. The following table shows the death rate in these cities as compared to those in three American cities:

	1890.	1891.	1892.	1893.
Munich	.8	.7	.3	1.5
Berlin	.9	.1	.8	.9
Vienna	.9	.6	.8	.7
Chicago	9.2	15.4	10.6	4.5
Pittsburgh	....	10.	10.	11.1
Louisville	8.8	8.1	8.1	8.4

The fact that the population in these cities are great beer drinkers may, perhaps, have some influence in bringing about the low death rates from typhoid fever, but the main factor is the pure water supply. Vienna at present gets its water from the Schneeburg, through an aqueduct fifty miles long. Up to 1874 well water was used almost exclusively. Owing to defective drainage this was very impure and the annual death rate from typhoid fever was very high — 10 to 34.

Berlin gets its water from the river Spree and Lake Tegel, the waters of both being passed through sand filters.

Munich from 1854 to 1859, had a death rate from typhoid fever of 24. In 1860 the sides and bottoms of the privy pits were cemented and the death rate fell to 16.80. Between that time and 1864, good sewerage was introduced and the rate fell to 1.75.

In Stockholm before sewers were introduced the death rate from typhoid fever was 5.1. As the number of metres of sewer pipes increased, the death rate from typhoid fever steadily diminished, until in 1887, with 65,709 metres of sewers, the death rate was only 1.7.

Breslau, before being sewered, had a death rate from typhoid fever of 15.2. Ten years later, after proper sewers had been introduced, the death rate had fallen to 5.5.

But examples of this kind could be multiplied indefinitely. It is not evidence or statistics that are needed, for we have enough of both. What is now to be done is to bring this evidence home to those in authority and to induce them to institute the necessary reforms. There is no reason why any American city should have a higher mortality from this disease than the larger foreign cities, and as Osler says in his Report on Typhoid Fever, "Perhaps the best gauge of the sanitary condition of a city is to be found in the mortality returns from typhoid fever."

32 EAST THIRTY-FIRST STREET.

IV. DANGERS OF THE DOMESTIC USE, OTHER THAN DRINKING, OF CONTAMINATED WATER,

WITH SPECIAL REFERENCE TO MILK AND OYSTERS AS CARRIERS OF BACTERIA.

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Water containing pathogenic bacteria may cause disease in many ways other than by being used for drinking purposes, these depend-

ing, for the most part, on an intermediate contamination of some article of food which is eaten uncooked.

Of the articles of food which carry the bacteria from contaminated water, those which are themselves good media for the growth of most bacteria, as, for example, milk, are by far the most dangerous, for simply washing milk pails with water containing the bacilli of typhoid fever may introduce the germs into the milk in which they can rapidly increase. Such seemed to be the mode of contamination of the milk in the recent very severe epidemic of typhoid fever at Stamford,[1] Connecticut.

There are other articles of food which will carry the living bacteria, but will not furnish a favorable soil for their multiplication such as oysters and ice cream. Butter, clams, salads and fruits may probably act as the carriers of pathogenic bacteria, but concerning their efficiency in this capacity we have as yet little definite knowledge.

MILK.— Milk, providing as it does, a favorable medium for the growth of most bacteria, has probably conveyed more disease from contaminated water than any other article of food. Cholera, diphtheria and typhoid fever have all been transmitted in this way.

The usual explanation of this conveyance of bacteria is that the pails were washed in the contaminated water, and in one epidemic at least, already quoted, that appeared to be the real explanation. In other cases the water gets into the milk during cooling, while in still others the water is used to increase the bulk of the milk.

Cholera.— The conveyance of the bacillus of cholera from contaminated water was well demonstrated in an epidemic on shipboard reported by Simpson.[2] Of the ten sailors who drank the contaminated milk all had cholera, while of the remaining fourteen members of the crew only one had cholera. The milk was furnished by a man who washed the clothing of the crew. He admitted having mixed the milk with a fourth part water from a tank, the water of which had caused an epidemic of cholera in the neighborhood.

Diphtheria.— Out of eleven epidemics of diphtheria which I have collected[3] and which were caused by milk, in two, Henden[4] and Cardiff,[5] the milk was supposed to have been contaminated by the well water used at the farms, which was found to contain sewage. At Cardiff the epidemic was stopped by closing the well.

Typhoid Fever.— Typhoid fever has been shown to have been transmitted by milk in many epidemics and in some of these contaminated water has been the source of the trouble. Of fifty-three

epidemics of typhoid fever due to milk[6] in nine the contamination originated from foul water.

An epidemic of typhoid fever, due to the contamination of milk by the contaminated water of a stream, occurred in Geneva, Switzerland, in 1890.[7] A number of cases of typhoid fever occurred among the consumers of one milk supply. No case of typhoid fever was found in the family of the milkman or dairyman. The dairyman, however, washed his pails in a stream in which a neighbor was washing the clothes of a typhoid fever patient. So strong was the evidence against this dairyman that the milkman sued him for damages and recovered fifteen hundred francs.

A still more interesting epidemic of typhoid fever illustrating the way contaminated water may enter milk during cooling occurred in Springfield, Mass., in 1892.[8] In this town of forty-seven thousand inhabitants there were one hundred and fifty cases with twenty-five deaths: one hundred and one had milk from the same dairy and one hundred and thirty-five may have had some of the milk. This milkman received his milk from several farms, and on that account there was considerable delay in ascertaining the source of the contamination, for the milkman did not encourage investigation at the farm on which the contamination took place. Here the farmer's daughter was found to be suffering from typhoid fever. The privy contents were emptied on a field through which the laborer's walked. The milk cans were cooled by submerging them in a well after first plugging them with wooden stoppers. The morning's milk remained submerged in this well all day. The well was covered with planks on which were masses of manure. The plugs in four out of nine cans examined were found to leak. On bacteriological examination this water was found to contain colon bacilli, thus giving evidence of fecal contamination. Other epidemics where milk has apparently served as the carrier of the bacillus typhosis from contaminated water are those at Warwickshire in 1883,[9] Gronigen in 1885,[10] Shoreham in 1886,[11] Minnegue in 1887,[12] Leeds in 1892,[13] Brixton in 1894[14] and South Lambeth in 1894.[15]

OYSTERS.—Besides milk the other article of food which has been demonstrated to be an important conveyer of pathogenic bacteria from contaminated water to the human body is the oyster. This property is probably shared by other shell fish although it is only in the case of the oyster that the facts have been thoroughly demonstrated.

Typhoid Fever.—To Dr. W. H. Conn, of the Wesleyan University,

belongs the credit of having established this fact, and with the publication of his article[16] in December, 1894, practically begins the literature on this subject. In the autumn of 1894 an epidemic of typhoid fever broke out among the students at Wesleyan University. Twenty-six cases appeared between October 20 and November 9. Of these twenty-three were pronounced, thirteen were very serious and there were four deaths. After a long series of investigations and the exclusion, one after another, of suspected causes of the epidemic the following facts were conspicuous: all those attacked were men, all students of Wesleyan University, and all but three were members of three out of seven college fraternities. Of these three college fraternities twenty-five per cent. of the members were attacked. With these data he searched for some common cause of infection one or two weeks previous to the outbreak of the epidemic. He found that on October 12, eight days before the occurrence of the first case, all the fraternities had their annual initiation, followed by a supper. All the articles of food used at these suppers had come from different sources with the single exception of the oysters, all the three fraternities affected being supplied by one dealer, while none of the other four ate these oysters. The oysters were eaten raw. It was found that two of the three cases occurring in men not members of these fraternities had eaten oysters from the same supply. Of twenty alumni who attended these suppers, two suffered from typhoid fever, and of five Yale students who attended two were taken with typhoid fever four weeks later. Having ascertained that the oysters were the carriers of the infection, he turned his attention to ascertaining the cause of the contamination of the oysters. He found that the oysters were grown in Long Island sound and were freshened in a creek about 300 feet from the outlet of a private sewer from a house where there were two cases of typhoid fever. Conn thus demonstrated that the disease, with one possible exception, occurred only in consumers of these oysters, that these oysters were the only common article of food, and that the oysters were fattened in a place where they were liable to contamination by sewage from typhoid patients. It remained to be demonstrated that typhoid bacilli could find a habitat in the oyster and could live there long enough to be active at the time the oyster was used as food. It had already been shown by de Freytag[17] that the Bacillus typhosis could live in a concentrated salt solution for five months, and by de Giaxa[18] that it could live in unsterilized sea water nine days and in sterilized sea water

twenty-five days. Foote,[19] of New Haven, by a series of laboratory experiments, ascertained the following facts :

1. The Bacillus typhosis will live at least eight days in water taken from an oyster bed.

2. Oyster juice contains a varying number of bacteria, but fewer than occur in the water in which the oysters live.

3. The Bacillus typhosis injected into oysters will remain abundant for two weeks, after which period the number present is diminished, but they can be found thirty days after injection. The Bacillus typhosis will live longer in oyster juice than in water. It has more recently been shown by Herdman and Boyce[20] that oysters can live for a prolonged period in water rendered opaque by sewage. They can to a certain point render clear water containing sewage. They find an enormous increase in the bacterial contents of oysters brought from the sea and freshened near a drain pipe, the number increasing from 10 to 17,000 in one case. They also find that the Bacillus typhosis will live in oysters fourteen days.

Enteritis and Typhoid Fever.—Soon after the publication of Conn's paper reports of suspicious cases of oyster typhoid and enteritis were frequent. Sir William Broadbent[21] related six separate cases he had seen in consultation in which he attributed the typhoid fever to the eating of raw oysters.

Dr. Johnson-Lavis[22] called attention to the large number of cases of gastro-enteritis following the eating in Naples of oysters which had been freshened in the foul waters of Santa Lucia. Grant[23] wrote of four men who ate oysters together on the evening of Nov. 5th, of whom, on the 23d, three were sick with typhoid fever. Dr. W. Wilson[24] of Florence, Italy, reports several cases in which the evidence against the oysters is strong.

An interesting case is reported by Fitzgibbon[25] in which an infection with typhoid fever is attributed to oysters. These oysters were brought direct from the sea and were not fattened. They had, however, been stored in a house where there was a case of typhoid fever. Blyth[26] writes of a dinner party of six people, all of whom ate raw oysters ; all were attacked with severe diarrhœa and other symptoms of gastro-enteritis and one subsequently developed typhoid fever.

An outbreak of disease following the ingestion of raw oysters occurred, as reported by Chantemesse,[27] at l'Herault, France, last February. This town had been free from typhoid fever for about a year. On February 15th a basket of oysters from Cette was sold

and eaten raw by fourteen persons, all of whom were afterward ill, eight with slight diarrhœa, vomiting and malaise, four with putrid dysenteric stool and two with severe typhoid. Others in the same houses who ate no oysters remained well.

Perhaps the most important recent paper on this subject is that of Arthur Newsholme,[28] the Medical Officer of Brighton, England. Of 181 cases of typhoid fever occurring at Brighton during the years 1893–1896, inclusive, 56, or about 31%, were attributed to shell fish, and of these 36 were attributed to oysters and 20 to other shell fish. Nearly all these shell fish were traced to one source, and at this place the oysters lay between high and low tide in mud which showed evidence of sewage. Sewers discharging near the beds of both the oysters and mussels contained the sewage of several thousand persons.

Cholera.—That oysters may have played some part in the extension of the epidemic of cholera in England in 1893 is suggested by the report of the Medical Officer of the Local Government Board.[29] The evidence, however, is circumstantial and not convincing. Grimsby and Cleethropes, two watering places at the mouth of the Humber, are at the apex of a triangle which includes 34 of the 50 places attacked. Two hundred and thirty-five thousand excursionists visited these places during the two months that cholera prevailed. These places distributed 400,000 oysters a week. The oyster beds are periodically bathed in sewage.

On the other hand, it has been found by Frankland[30] that cholera bacilli if introduced into oysters usually disappear in six hours. In two cases they were present in 24 hours. In no case in 48 hours.

The recent publication of the Local Government Board of England on oyster culture in relation to disease[31] shows by a series of excellent maps the danger of many of the oyster beds of the English coast from sewer contamination.

CONCLUSION.

1. Most articles of food which are eaten raw and are liable to be washed with contaminated water may be carriers of pathogenic bacteria.

2. Milk, being a good culture medium for most bacteria, is a most dangerous article of food when taken raw if it has been contaminated by foul water, as proved by many epidemics.

3. Oysters are very liable to contamination if freshened near the opening of sewers. Oysters which have become contaminated have,

when eaten raw, caused gastro-enteritis in some cases and in others typhoid fever. The Bacillus typhosis is visible in oysters from 14 to 30 days, while the Bacillus choleræ will live usually but a few hours.

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205 WEST 57TH STREET.

V. WATER PURIFICATION.*

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The necessity for the purification of the water supplied to nearly all of our large American cities need not be dwelt upon at length. Typhoid fever and Asiatic cholera are now known to be transmitted chiefly by means of drinking water. What influence the Proteus vulgaris and allied species of bacteria, so commonly found in water,

* The great magnitude of the subject at the present time must be accepted as the writer's excuse for the brief mention of methods considered and the entire absence of many unimportant methods. Bacterial purification alone has been considered, for by this means we can gauge results of the various methods more accurately.

may have upon the production of cholera morbus is not definitely known, but it is probable that the influence is a strong one.

When we consider the immense annual destruction from typhoid fever in almost all our cities, the necessity for purification of contaminated supplies is evident.

The following table, compiled by Mr. John W. Hill, shows very clearly the influence of proper methods of water purification upon the death rate from typhoid fever :

CITY.	Typhoid mortality, 1890 to 1894 per 100,000.	Water supply.
The Hague	4.9	Filtered from sand dunes.
Rotterdam	5.2	Filtered from river Maas.
Christiania	6.8	
Dresden	6.9	Filter gallery, River Elbe.
Vienna	7.	Springs in the Schneeburg.
Munich	7.1	Springs, Mangfall valley.
Copenhagen	7.9	
Berlin	8.	Filtered, Lake Tegel and River Spree.
Breslau	11.6	Filtered from River Oder.
Amsterdam	13.9	Filtered from Haarlaem Dunes.
Stockholm	14.3	
Brisbane	14.3	
London	14.6	Kent wells, filtered from Thames and Lea.
Edinburgh	15.8	Filtered from reservoir in Pentland hills.
Trieste	17.	
Brooklyn	19.	Impounded and wells.
New York	20.4	Impounded from Croton and Bronx rivers.
Davenport, Ia	21.4 (1895–26)	Mechanical filtration from Mississippi.
New Orleans	21.4	Rain water from tanks and cisterns.
Sydney	21.6	Impounded from Upper Nepeau.
Hamburg	21.8 (1895–6)	River Elbe (filtered since May, 1893.)
Budapest	22.4	Ground water from wells.
Glasgow	22.8	Lake Katrine.
Brussels	26.2	
Paris	26.4	Rivers Seine, Marne, Vanne and Ourcq canal, wells, etc.
Manchester	27.6	Lake Thirlmere.
Venice	30.2	
Milwaukee	32.	Lake Michigan.
Rome	32.2	Fontanadi Trevi, Acqua Felice and Paoli.
Boston	32.6	Lake Cochituate and Sudbury river.
Detroit	33.8	Detroit river.
Dayton	36.	Diven wells.
Turin	36.8	
Liverpool	37.	Lake Vyrnwy.
Buffalo	39.2	Niagara river.

CITY.	Typhoid mortality, 1890 to 1894 per 100,000.	Water supply.
Providence	39.2	Pawtuxet river.
Covington	39.4	Ohio river.
San Francisco	40.2	
Prague	43.2	
Minneapolis	45.4	Mississippi river.
Baltimore	45.8	Lake Roland and Gunpowder river.
Newark	45.8	Impounded from Pequannock river since April, 1892.
St. Louis	47.	Mississippi river.
Newport, Ky.	47.5	Ohio river.
Philadelphia	48.2	Delaware and Schuylkill rivers.
Denver	48.3	South Platte river.
Cleveland	49.2	Lake Erie.
St. Petersburgh	52.3	Filtered from River Neva.
Cincinnati	52.4	Ohio river.
Moscow	57.	Springs, ponds, Moscov and Yanzi rivers.
Toronto	57.8	Lake Ontario.
Quincey, Ill.	58.	Mechanical filtration from the Mississippi river.
Dublin	58.8	Filtered from river Vartry.
Knoxville	61.9 (1895—59)	Mechanical filtration from Tennessee river.
Milan	62.	
Jersey City	75.	Passaic river.
Washington	76.6	Potomac river.
Louisville	79.4	Ohio river.
Chattanooga	80. (1895—48)	Tennessee river.
Chicago	84.	Lake Michigan.
Pittsburg	91.7	Allegheny river.
Lowell	92.4	Driven wells and Merrimac river.
Atlanta	92.8 (1895—43)	Mechanical filtration from Chatahootchee river.
Lawrence	96.2 (1895—48)	Natural filtration from Merrimac river since 1893.
Alexandria	162.4	Nile.
Cairo	189.4	Nile.

The above table offers much for careful consideration. It will be noticed that among the first on the list we find principally European cities using natural methods of filtration. Lower down in the list, and with an increasing mortality, we find the American cities, either without any method of purification or methods inadequate to materially lower the death rate. Davenport, Quincy, Knoxville, Atlanta and Chattanooga possess filtering plants, but it is evident that efficiency is not so great as in the European filters. A few apparent discrepancies exist in the table. Hamburg is stated to

have had a mortality of 21.8. In 1893 a filter plant was installed resulting in a reduction of the rate in the following year to 6 per 100,000. St. Petersburgh's high rate is ascribed to the difficulties attending filtration of Neva water. The amount of suspended material is so slight that the formation of a film on surface of filter is not possible (?). Lawrence started a filter in 1893, resulting in a diminution of the typhoid death rate from 96.2 to 48, and it was easily proven that all the cases occurring were due to drinking unfiltered water obtained from a polluted canal.

All methods of water purification may be conveniently discussed under two separate headings, natural and artificial. The natural processes usually considered as tending to render a return of a polluted water to its original condition are as follows: nitrification, percolation, oxidation, sedimentation, sunlight, heat and cold.

Nitrification is dependent upon the action of micro-organisms that carry on their specific function upon ammonia resulting from destruction of organic matter contained in water or soil. The first step in this destruction of organic matter is due to organisms of putrefaction forming ammonia as the important product. Following this action, the so called nitrous organisms change the ammonia to nitrous acid, and in the final step nitric organisms change the nitrous acid to nitric acid. Essential conditions for this change to occur, are presence of oxygen, suspended material in the water for the zoogloeæ of these organisms to attach themselves to, and the presence of saline constituents for the fixation of the acids as formed. The activity of this process in water is not great, due to inimical conditions, the most important of which is sunlight. All development and functional activity of these organisms cease in bright sunlight.

Percolation of water through the superficial layers of the soil is Nature's method, *par excellence*, for the purification of water. Under conditions existing in the soil, we have those most favorable for the process of nitrification. Percolation through a sufficient layer and properly adapted soil will absolutely sterilize a polluted water, this action depending on filtration, whereby suspended materials including bacteria are intercepted in their passage, and upon nitrification, the result of which is to so reduce organic pabulum that pathogenic and other organisms rapidly disappear from lack of nourishment and other unfavorable conditions for growth.

Oxidation of organic matter in water due to the direct action of atmospheric oxygen is decidedly slight, if at all. Prof. Leeds'

analysis of Niagara river water, before and after passing the Niagara Falls, showed only very slight differences. Prof. Mason performed very interesting experiments, in which he attached bottles containing mixtures of sewage and water to the connecting rod of a horizontal engine, allowing agitation to continue for varying lengths of time up to sixteen hours. Analysis before and after demonstrated only the slightest change. Bacterial reduction in water violently agitated with air is probably very slight. Pohl (1884) claimed a reduction in micro-organisms from 4147 to 728 per c.c. after violent agitation by hand for one hour. Numerous investigations since that time have given contrary results. In this connection, the length of flow necessary to purify a stream may be considered. Newburyport, Mass., had a shortage in its regular supply in Jan., 1893, and pumped directly from the Merrimac river, even after timely warning of its pollution from the State Board of Health. The result was an epidemic of typhoid fever, raising the number of reported cases for that month from the usual 1, to 34. An epidemic was in progress at that time in Lowell, twenty-six miles above (Sedgwick, *Boston Med. and Surg. Jour.*, Mar. 16, 1893). Instances parallel to the above have so often occurred that the adage, "No river is long enough to purify itself" would seem to have been about proven.

Cold undoubtedly has a general inhibiting influence upon the growth of bacteria in water, but, notwithstanding this fact, the number of bacteria in any one water will be greater in the winter months, due to the great destructive action of the solar rays during the summer. The following tabulated statement of experiments performed by Prof. Prudden in 1887 shows how little the influence of cold can be relied upon to destroy pathogenic bacteria :

	Original water.	4d.	11d.	18d.	37d.	51d.	66d.	77d.	103d.
B. Prodigiosus.....	6300 Per c.c.	3000	.....	....	22	Sterile.	.....	.....	
Prot. Vulgaris.....	8300 Per c.c.	.....	.....	88	....	.....	.....	.....	
Liquifying bac.....	800,000 Per c.c.	Sterile.	.....	....	....	.....	.....	.....	
Staph. Pyog. Aureus.....	Uncountable	.....	.....	....	....	.....	66000.	.....	
Fluorescent bac...	.....	.....	.....	....	....	.....	.....	85000.	
B. Typhi Abdom..	.....	.....	1,000,000	....	....	.....	.....	72000.	7000.

In the above experiments the organisms were subjected to a steady cold temperature of from 16° to 30° F. Much more marked was the influence of alternate freezing and thawing. With the typhoid

bacillus, alternate freezing and thawing of three times in three days proved destructive. It has been proven, both experimentally and statistically, that extremes of winter weather have so little effect upon the typhoid bacillus that no protection from this source can be assured users of a water containing them.

Heat was formerly thought to have some effect in reducing the number of bacteria in water exposed to warm summer sun. Investigations by Buchner and by Ward, using alum solutions between the sun's rays and the bacteria under investigation, proved that the destruction was due solely to light.

Sunlight plays a most important part in the destruction of water organisms. Pathogenic organisms also are very sensitive to light influences. Buchner's and Marshall Ward's experiments in this direction showed that typhoid organisms were destroyed absolutely by exposure to direct sunlight for two hours. Diffused daylight has the same effect, but only after several hours' action. Buchner, experimenting upon water from the river Isar, collected at different times during the day, found the number of organisms much reduced during the time the sun shone brightest. Further experiments conducted by the same observer, in the clear water of Lake Sterneberg, demonstrated the activivity of the sun's rays even to the depth of eight feet. Typhoid plates exposed for four and one-half hours at that depth resulted in the death of the organisms. The smaller number of bacteria found in exposed waters during the summer months is largely due to the destructive influence of the solar rays.

Sedimentation plays an important part in the purification of certain classes of water, notably those of quiet lakes. In running streams the effect of sedimentation is not very strong, and, although appreciable, is of no practical importance. Artificially, purification by sedimentation is often resorted to, and will be considered under artificial methods.

Artificial methods of water purification can be subdivided as follows: Natural methods,[1] including constant filtration, filter galleries, intermittent filtration and sedimentation. Mechanical methods, with and without coagulants. Distillation. Chemical methods, including direct addition of chemicals and those methods dependent upon the production of chemicals in the water by electrolytic methods. Domestic methods, including porcelain candle filters, natural stone filters, pressure through sand, charcoal, etc., gravity

1. So called, because approximating Nature's methods.

through sand, charcoal, etc., and by means of heat. Special methods for the removal of iron, algæ, etc.

Since 1839 filtration of water through beds of sand has been practiced in London, and while yielding a clear product, the efficiency of such filtration in preventing the passage of *materies morbi* was much questioned. It was not until Koch's method of plate cultivation was introduced that their real efficiency was proven and an impetus given to investigations favoring their improvement. At the present time a very large number of such filters are in existence, though confined almost entirely to Europe, where greatly polluted streams render it imperative that efficient methods of purification be practiced. Experimental data and mortality statistics innumerable are to be found, showing just what these filters can do, and to what extent they can be relied upon to prevent the spread of water-borne diseases.

In brief, such a filter consists of an inclosing reservoir, about twelve feet in depth, and in superficial area from one to two acres. The bottom of reservoir is traversed by suitable under-drains, on top of which is placed a layer of coarse gravel to the depth of six or eight inches, then a nine or ten-inch layer of fine gravel, then coarse sand to the depth of twelve to sixteen inches, and finally a layer of fine sand about three feet in depth. Much variation exists in the relative depths of the various filtering layers in filters at different places. In localities where the mean winter temperature for any length of time averages below the freezing point, it becomes necessary to cover the filters to prevent freezing. Water is flowed upon the bed to a depth of three or four feet, at which height it is kept constant. The rate of filtration is regulated by a valve at the effluent, and is continuous until the sand becomes so clogged that water will not pass in the stated or required quantity with the pressure or loss of head allowed. Then it becomes necessary to drain the filter and remove the upper layer of sand to the depth of perhaps half an inch, when the filter is again ready for use. When by repeated scrapings the fine sand layer becomes reduced to sixteen inches, fresh sand is added to the original height. Water containing much suspended material must stand a sufficient length of time in sedimentation basins to remove the grosser particles, otherwise the filter would become clogged too soon. It has been found more economical to sediment muddy waters before introduction to the filter, rather than to drain, and remove upper layer of fine sand too often.

It was formerly supposed that the superficial layer of sand stopped the progress of micro-organisms by the formation on the sand surface of a slimy coating. While this is true to a certain extent, there are other influences determining the effectiveness of such filtration. Examination of sand in Altona filters by Reinsch, demonstrated at least three per cent. of the original water organism below the slime layer. A progressive decrease in numbers was noted throughout the depth of sand. Various investigators claim that all organisms are stopped in their passage through the filter, and those found in the effluent are derived from the under-drains. Piefke (Berlin) concluded after careful investigation on the Berlin filters, that the process was purely a biological one, and that straining had nothing to do with it. In the experimental work at Lawrence (Prof. Sedgwick), using special organisms that were easily identified in the effluent, it was demonstrated that some did pass the filters under certain circumstances. Later researches at Lawrence show clearly that the organisms found in effluent are derived from both the under-drains and the original water. The question is not by any means thoroughly understood, but we may safely conclude that the process is a combination of physical and biological action.

The efficiency of natural filters depends upon many factors — thickness of sand layer, "effective size"[1] of sand grains, uniformity in size of sand grains,[2] rate of filtration, pressure on surface of sand due to loss of "head,"[3] the superficial area, and also the question of covering — all exert an influence. The best practice at the present time favors the regulation of filtration as follows:

Superficial area of bed.....	1 acre.
Rate of filtration.	2½ million gallons per day.
Height of water in bed.....	3½ feet.
Effective size of sand grain.....	0.2 m.m.
Uniformity coefficient.....	2.0
Depth of coarse sand and gravel,	2½ feet.
Depth of fine sand.....	3 ft. Not allowed to become less than 16 in.

The Hamburg filters, completed within a few years, are modern in every respect and differ somewhat from the older ideas. The water is first allowed to remain in decantation basins, and after 16 to 20

1. Effective size, 10 per cent. by weight of particles are smaller and 60 per cent. larger than figure given.

2. Uniformity coefficient, rate of A to B when values of A and B are such that 60 per cent. by weight is finer than A and 10 per cent. finer than B.

3. Head, difference between level of water in filter and level in effluent reservoir.

hours' sedimentation the upper two-thirds of water only is conducted to the filters, the remainder being emptied with the deposited material. The filters are open, have a superficial area of 7,650 square meters (1.88 acres) and contain a lower layer of coarse and fine gravel .6 meter in depth. On top of this is a fine sand layer to the depth of one meter. As occasion requires the upper layer of sand is removed and washed with filtered water. When, due to repeated scrapings, the upper fine sand layer becomes reduced to 40 centimeters (16 in.) new sand is added to the original height. The size of filter bed is not in conformity to the English custom. In England the beds are one acre in superficial area, they claiming for this size greater ease in handling, less liability to uneven filtration and cracking of filtering surface. Since the installation of filter plant at Hamburg, the death rate has very materially decreased, and from an average typhoid mortality of 21 per 100,000 for the years 1890 to 1894, inclusive, it had dropped to six in 1894.

The average results of filtration of Thames water for the partial supply of London for several years past has been a removal of about 98 per cent. of the contained bacteria. The typhoid mortality has been in accord, averaging about 15 per 100,000. This is a most remarkable result considering the immense population and the filthy water dealt with.

No more impressive illustration of the effectiveness of natural filtration can be given than the often quoted Hamburg cholera epidemic of 1892, and the comparative freedom of Altona from the disease. Both cities are in close proximity. In fact they merge one into the other and no boundary exists. Both empty their sewage into the Elbe and draw their water from the same stream, Hamburg taking it from a point above both cities and Altona below. During August, 1892, a band of Russian gypsies encamped on the banks of the Elbe and the excrement of one of its members, subsequently found suffering from cholera, was emptied into the river. There speedily followed an epidemic of the disease in Hamburg, with a total number of cases of 7,427, and 9,321 in August and September, respectively. During the epidemic there occurred 17,020 cases with 8,605 deaths. Hamburg delivered water to its inhabitants with practically no purification followed by the above disastrous results. Altona, although deriving its supply from the same river and immediately below both cities, after receiving the sewage of almost 800,000 people, escaped the epidemic with but comparatively few cases and these were largely imported. Needless to say Altona

filtered its water before delivery. Notwithstanding filtration, a small epidemic of cholera started in Altona during December, 1892 and January, 1893.. Investigations by Prof. Koch proved this to be due to freezing of the Altona beds while removing the slime-layer, resulting in cracks more or less large and the passage of unfiltered water. In previous years, during the winter months, Altona suffered from typhoid epidemics following closely upon the same condition in Hamburg. This never occurred in the summer even though an epidemic was in progress in Hamburg or towns above. It was conclusively proven that this was due to freezing of the beds, and illustrates how important it is that proper coverings be applied to those places where freezing can occur.

Warsaw, Russia, filters its water from the Vistula, effecting a reduction of the contained bacteria from 1500 to 30 per c. c. During the cholera epidemic of 1893, the disease raged in all the surrounding villages on both banks of the river, while Warsaw escaped with but few cases. Typhus fever, formerly prevalent there, has occurred but rarely since filtration of the water has been practiced.

In Lawrence, Mass., the typhoid mortality has been over 100 per 100,000. During the year following the distribution of filtered water the mortality was reduced more than one-half and it was satisfactorily proven that the cases occurring were due to drinking unfiltered water.

The intermittent method of filtration as practiced at Lawrence differs from that previously described in that the water is applied to the filters intermittently, the water being allowed to pass the filters 16 hours and the filter draining the remainder of the 24. The principle involved is the admission of air to render the nitrifying organisms more active. Slightly better results are obtained at certain seasons, but practically it has not been proven that the method is superior to those where the water is allowed to pass constantly. The filter is $2\frac{1}{2}$ acres in extent and designed to filter 5,000,000 gallons per 24 hours. The results during the first year of service were as follows:

	Bacteria per c. c.	Removed.
River	19900.	
Effluent at filter	264.	97.58%
Reservoir outlet	139.	98.73%
City hall tap ($1\frac{1}{2}$ miles from filter)	90.	99.17%
Laboratory tap ($2\frac{1}{2}$ miles from filter)	82.	99.25%

(Fuller, Jour. Am. Pub. Health Assoc.)

Later reports average more perfect results, showing a removal of 98.4% of the contained bacteria as tested in water at effluent. During the winter of 1893–94 a severe epidemic of typhoid fever occurred at Lowell, whose sewage empties into the Merrimac 9 miles above Lawrence. Contrary to experiences prior to filtration, Lawrence was not affected.

At Worms and Magdeburg a rather different method of filtration is practiced than those described. Sand is mixed with a double silicate of potassium and sodium and pressed into plates 1 meter square and 20 centimeters thick. In the center is a cavity 2 centimeters deep in which the filtered water collects. The plates are baked at a temperature of 150 C. It is claimed that filters so constructed are more economical, filter more rapidly and are as efficient as the ordinary sand filters. Restoration of free flow is accomplished by slowly forcing water from below upward. No efficiency tests are at hand, although filters of much the same construction are in use at St. Petersburg, and judging from the typhoid mortality of the city for some years past (52 per 100,000), great efficiency is not obtained.

Filter galleries, properly considered under natural methods, consist of galleries or trenches excavated on a river bank a greater or lesser depth below low-water mark and separated from the river by the natural bank to the extent of several feet. The looked-for object is the filtration of the water from the river through the intervening bank. Since the slope of the land and flow of surface water is always toward the river, great risks of pollution from this source as well as from cracks in the bank must be considered. Many communities obtain a pure water by this means, but it is largely a matter of chance — as many more obtain a water but little better than before its passage into the gallery.

Sedimentation has its value as a means of purification, but it cannot be relied upon alone. Along the banks of some of our western rivers sedimentation has been practiced for a long time, more perhaps, to remove mud than for any organic purification expected. That bacterial purification does take place cannot be questioned. The following table shows to what extent this may be possible :

New River Co. at Stoke Newington.	Bacteria per c. c.
Cutting, above reservoir	677.
After passing first reservoir	560.
After passing second reservoir	183.

West Middlesex Co. at Barnes.

Thames water at Hampton	1437.
After passing first reservoir	318.
After passing second reservoir	177.

(PROF. FRANKLAND).

As a means of water purification without subsequent filtration, sedimentation is not to be recommended.

Mechanical methods of filtration were originally introduced for the removal of large particles from water intended for use in paper-making or other industries where it was essential that a clear water be used without reference to bacterial removal. Recently, considerable attention has been given to the removal of bacteria by means of these filters because they could be operated and constructed cheaper than natural filters. The machinery is protected by patents and prices kept so high that it is questionable whether plants of this character could be installed any cheaper than natural beds. These processes differ from the natural methods in that the sand is contained in tanks of varying sizes and the water is passed through in very great quantities, even as high as 300,000,000 gallons per superficial acre per day. All manufacturers have two varieties, the so-called "gravity" and "pressure" filters, differing mainly in that the gravity filters are open wooden tanks, into which the water must be pumped, then after filtration, again pumped into the service pipes. The pressure filters are closed steel tanks, placed in the direct main service, the service pumps passing the water through the filters into the mains. The rate of filtration does not, as a rule, vary in the two systems. A very large number of filters of the character are manufactured, all under patent-rights, all depending upon the same principle, and differing only in the mechanical methods for washing the filtering medium and adding the alum or other coagulant when used. They are operated both with and without coagulants, depending upon the water and the degree of purity desired. At the present time, the term "mechanical" filtration is usually applied to those methods where a coagulant is used. Without entering into details, it may be stated that filters of this class operated without a coagulant are practically valueless for the removal of bacterial life from a water passing through them. The rate of filtration is so high that the organisms are forced through and but a trifling reduction can be obtained.

Descriptions of such filters may be obtained from circulars issued by the various manufacturers.

Very meagre and unsatisfactory data are at hand showing the efficiency of mechanical methods. Dr. J. J. McKenzie made an examination of St. Thomas water after passing through a New York filter with the following results:

	BACTERIA PER C. C.
Before filtration	45,000
After filtration	90.
Percentage removed	99.8

Dr. Chapin, averaging three examinations of Long Branch, N. J., water, after passing same filter as above, obtained the following results:

	BACTERIA PER C. C.		
	1	2	3
Unfiltered water	259	298	248
Filtered water	5	2	3
Average removal	98.76%		

In neither of the above tests are any data given concerning the time of taking sample, and they can hardly be considered a test of the filters' efficiency, except at the time of taking sample. A very superior result might be obtained at certain times and not at others.

Manufacturers of the Warren mechanical filters publish the following efficiency tests:

Bacterial analyses of Mahoning river water from Warren, O., before and after treatment by the Warren Mechanical filter:

	BACTERIA PER C. C.		
Time Collected.	River Water.	Filtered Water.	Per Cent. Removed.
10.15 A. M.	2,373.	....	.....
1.15 P. M.	938.	....	.....
4.30 P. M.	1,248.	....	.....
Average	1,520.		
10.00 A. M.	.....	16.	98.94
11.00 A. M.	.....	11.	99.27
12.00 M.	.....	11.	99.27
1.00 P. M.	.....	41.	97.30
2.00 P. M.	.....	97.	93.61
(FILTER WASHED.)			
3.00 P. M.	.....	28.	98.16
4.00 P. M.	.....	11.	99.27
5.00 P. M.	.....	10.	99.34
5.55 P. M.	.....	9.	99.40

As the river water remains in the settling basin and settles two hours before passing the filter beds, the results of the analyses of filtered water are compared with the average of the three samples of river water.

The above report is not at all satisfactory, for the river-water examinations were apparently determined at a different time from those of the effluent, and no mention is made of the rate of filtration.

Exhaustive experiments have been made by the Louisville Water Co. on several varieties of filters; but, unfortunately, the experimental work has been conducted privately, and no report has yet been published.

By far the most important investigation at present in print is to be found in the "Appendix to the Seventeenth Annual Report to the State Board of Health of Rhode Island" (Edmund B. Weston). The experiments extended from March 27, 1893, to January 30, 1894. Three filters were used. No. 1 contained a filtering media of pea gravel three inches, coarse sand one inch, and fine sand eighteen inches. In this filter varying sands were used and operated as both a mechanical and natural filter. No. 2 contained the same filtering media as number 1, and was used throughout the experiments as a natural filter. Number 3 was a Morrison filter and contained a filtering media of coarse crushed quartz ten inches, and twenty-four inches of fine crushed quartz, of an effective size of .59 mm. and a uniformity coefficient of 1.5. In filters 1 and 2 the sand was cleansed either by scraping about one-half inch off the surface or by washing the material thoroughly. Number 3 was cleansed by revolving a mechanical rake imbedded in the sand while washing with a reverse current of water until the wash water passed clear.

During about seven months parallel experiments were conducted upon the three filters. At the end of this time the experiments were discontinued with the natural filters because of it "having been satisfactorily ascertained that the length of run was much less than the mechanical filter, the bed became clogged and the rate of flow in the natural beds was but 30,000,000 gallons per acre in twenty-four hours, while the mechanical filter was run at the rate of 128,000,000 gallons per acre in twenty-four hours. The efficiency of removal of bacteria was not as high, and the results variable, either as the result of cracks in the filter or from some unknown reason." (Gardner T. Swarts, M. D., *Jour. Amer. Pub. Health*

Assoc., 1895.) After October, 1893, all experiments were conducted upon the Morrison filter in order to determine the best method of running the apparatus with the object in view of installing a plant of this kind for the filtration of Providence water. It was found that the Morrison filter could be operated to deliver 128,000,000 gallons per acre per twenty-four hours, using one-half grain alum per gallon, applied in the beginning of run in a "free flow," *i. e.*, a pint of alum solution containing 911 grains of the coagulent, added rapidly, thus causing rapid formation of film on surface of filter. Conducted in this manner satisfactory results were obtained, causing a diminution of the contained bacteria to the extent of 98.6 per cent. This certainly shows a great degree of efficiency, but several points are open for criticism in the Providence experiments, and the results obtained cannot be considered conclusive for reasons given in the following paragraphs. In the comparative experiments performed prior to October none of the plates were allowed to reach a maximum count. As a rule, but two days were allowed for development, and this was supposed to be sufficient, since the results were to be comparative. The fallaciousness of this can be readily seen when we consider the effect of the usual coagulents upon water organisms. Either a very large proportion are killed or so affected, that development, when subsequently plated, is very much retarded. The effect is noticeable with alum, and even with metallic iron treatment a marked restraining influence is apparent. Anthrax inoculated water, shaken with a small quantity of iron, and subsequently plated on agar, may not show an anthrax colony for several days when grown at body temperature. When colonies become visible they grow very slowly, and each will be surrounded with a zone of iron oxide. The toxic effect of alum on water organisms has been demonstrated by Frankland and other observers. The effect varies with the temperature of water for equal quantities of alum. Therefore it is evident that no value can be attached to results computed after two days growth, as in the tests under consideration. If we are to accept the theory of a biological factor in filtration, we must assume that varying rates of filtration will have an effect upon the growth of organisms passing a filter. The lower the rate of filtration, the slower a passing organism will grow, and *vice versa*. The results obtained with the natural filters at Providence were poor and not in accord with results obtained at Lawrence or Berlin, where experiments were conducted covering long periods of time and

under many varying conditions. In fact, the results obtained were not in accord with those obtained with filters in actual practice. This was doubtless due to the high rates of filtration employed.

In the experiments upon the mechanical filter only end counts can be of value for reasons just cited. Taking all end growths of samples collected one hour after starting filter, the average removal was 95.2 per cent of contained bacteria. In those taken thirty minutes after starting filter an average removal of 95.5 per cent. was obtained. The tests upon which the removal of 98.6 per cent. was based were taken at times when the filter was working in a "normal" manner. These periods were sixteen days in October and November, during ten of which tests were made, and six days in January. This manifestly is too short a time to determine with any great degree of accuracy the actual efficiency of any filter. The removal of test organisms, which in this instance was the bacillus prodigiosus, continued over a considerable period, gave very good results. As a rule 100 per cent. of the added organisms were removed by the filter.

During the early part of January the efficiency of filter was very much reduced, due, perhaps, to the addition of bouillon cultures of test organisms. Just how far this could have been due to the above cause was not proven. The sand was found to be coated with a brown slime removable only upon boiling with caustic soda. It was recommended that a periodical treatment with this material be a feature of the large plant. It certainly seems evident that a very high content of bacteria will decrease the life of a filter and possibly necessitate caustic soda treatment oftener than once in six months, as recommended. It was satisfactorily demonstrated that great care must be exercised in the addition of alum and without the "free flow," about three hours were necessary to obtain a satisfactory effluent. This necessary care upon which the efficiency depends is certainly objectionable, considering the carelessness of the average water-works employee.

Very satisfactory comparisons of the work done by natural and mechanical methods cannot be made at present, because sufficient data regarding mechanical filtration is not obtainable. Prof. Leeds considers it impossible to give a "categorical answer stating that either method is preferable in all cases. The preference depends upon the conditions, and when properly carried out, both methods, according to the evidence so far on record, appear to yield equally good results." It is evident from statistics at hand, as given for cities[1] using me-

1. See table.

chanical filters, the typhoid death rate has not been reduced to the extent it has in cities using natural methods, as instanced by the many European cities obtaining supplies from streams with a much greater degree of pollution than anything we have to deal with in America. Therefore, we must, in the light of our present knowledge, consider the natural methods superior.

Purification by distillation has lately assumed some proportions. In many of our large cities plants have been erected for the commercial production of water purified by double distillation. Subsequent aeration removes, to a large extent, the flat, insipid taste found in such waters. All large ocean steamers are provided with distilling plants, rendering it unnecessary to carry large supplies of fresh water. A pure and bacteria-free water can be obtained by this means, but the expense precludes the possibility of its adaptation to municipal supplies.

Of the chemical methods of water purification, we may consider those purely chemical and those dependent upon the production of chemicals in the water by electrolysis.

Traube has recommended calcic hypochlorite for purification on a large scale. He found that the addition of 0.000426 of the salt to 100 c. c. of water resulted in the complete destruction of all contained bacteria within two hours. At the expiration of this time, the addition of 0.000209 calcic sulphite decomposed all the hypochlorite. The amount of harmless salts remaining after such treatment is smaller than usually found in potable waters.

For purification on a small scale, many substances have been recommended. Potassium permanganate has been highly extolled, but in sufficient quantities to destroy the bacteria present a decidedly unpleasant taste results. Monol (calcic permanganate) has been claimed to possess the property of "purifying swamp-water, or even water containing vegetable poisons, to such an extent that no harm can result from drinking" (Friedel). This means of purification is attracting much attention in France at present, and observers claim a sterile water after the addition of very minute quantities of the salt. Subsequent removal of remaining permanganate is accomplished by passing the water over manganese binoxide. Tincture of iodine has been used, and Meillere (*Lancet*, January 23, 1895) claims that the addition of four drops to the liter will positively destroy all pathogenic bacteria in a few minutes.

But little experimental work has been done to determine the

efficiency of electricity as applied to the purification of water. Thus far the results obtained have not been satisfactory; either the water acquires a bad taste, or bacterial purification is slight. Hermite and Webster's electrolytic process will successfully sterilize water, provided the contained chlorides are excessive. The decomposition, resulting in formation of free chlorine and easily decomposable chlorine compounds, give the water an extremely bad taste, and may produce nausea and vomiting in those using it. Materials might be added to combine with the chlorine, but the result would be a dilute saline solution, more or less unpalatable. Opperman deduced from experimental work the impracticability of existing electrical processes, but found that a secondary treatment, using aluminum electrodes, relieved the water of all objectionable features, and feels convinced that cholera or typhoid organisms would be destroyed. The Roeske system of water purification uses electricity as an aid in its work, and claims good results. The water is conducted into a well, where it meets a quantity of metallic iron resting on a perforated plate. One pole of a dynamo is connected with the tray upon which the iron rests. This mass of metallic iron is kept in constant agitation by means of a metallic rake, to which the other pole of the dynamo is connected. A strong current of air is constantly pumped through the well to assist in the process. The water is pumped from this well through pressure filter tanks, passing in its course through four feet of sand at a rate of one gallon per superficial square foot per minute. It then passes to the top of a stand pipe, where it is made to descend in a shower against a current of air forced upward through it. Solution and oxidation of the iron, resulting in flocculent ferric hydrate, together with the electrolysis of saline constituents, producing nascent chlorine, are effective purifiers. It is thus a combination of chemical and mechanical methods. Unfortunately no efficiency tests have been made. The Anderson process is similar to the above, minus the electrical treatment. This consists of the passing of water through large revolving drums containing scrap iron. It then passes through a series of settling or decantation basins, where most of the ferric hydrate is deposited before passing into filter beds much like those used in London. Miquel made a series of tests on water from one of these plants, and claimed a removal of 99.3 per cent. of the contained bacteria.

Domestic filtration as a rule is not efficacious. But few filters are of any value and these to be of use must be handled understandingly and with great care.

The Pasteur filter consists of an outer metallic cylinder and an inner tube of unglazed porcelain. This inner tube is ten inches long, one and one-eighth inches in diameter, and a thickness of wall of one-eighth inch. It is closed at one end and at the other provided with a nipple through which there is a small opening for the passage of filtered water. The water is passed into the outer shell and forced through the porcelain tube by the pressure existing in the mains. With a pressure of sixty pounds about three gallons per hour can be obtained. Operated without pressure only one and a half gallons per tube per twenty-four hours can be secured. All suspended impurities are retained upon the surface of the inner tube, which can be easily removed for cleansing. The relative value of many different filters has been determined by G. Simms Woodhead and G. E. Cartwright Wood (*British Medical Journal*, December 29, 1894). Water infected with yeast plants and staphylococcus pyogenes aureus was passed through the filters for four days. Enumeration of organisms in the filtered water was made daily. Similar experiments were performed with various pathogenic bacilli and it was determined that only two filters were able to prevent the passage of organisms during that time, viz., the Pasteur and the Porcelain d' Amiente. No matter how carefully handled nor how often cleansed, a time will come when the filter becomes clogged or the organisms develop in the pores and grow through. It is therefore necessary to sterilize periodically and treat in some way to restore the original freedom of flow. Heat can be used but, the risk of breaking the tube is great. A soaking for half an hour in a five per cent. calcic permanganate solution, followed by a soaking in a sodic sulphate solution, will accomplish perfect sterilization and return to free flow. A daily brushing of the tube and a weekly treatment as above outlined will guarantee a germ-free water, provided the tube is without flaws.

The Berkefeld filter is very similar to the Pasteur except that the inner tube is made of an infusorial earth. It is 26 c. m. long, 5 c. m. external diameter and 1 c. m. thickness of wall. The yield is much greater than the Pasteur, the tubes of closest texture passing 750 c.c. per minute under a pressure of three and a half atmospheres. It yields a sterile water for a shorter time than the Pasteur.

The Crique filter is constructed much like the Pasteur, but possesses a larger filtering tube, held in position against a rubber packing by a set-screw on top. Tests performed on this filter demonstrated its ability to prevent the passage of bacteria. (Special Report Buffalo Health Department, W. G. Bissell, M. D.)

The Crystal Fountain filter consists of a natural stone tube enclosed in a metal receptacle. Resting against the tube and held in this position by the water pressure, is a piece of stone against which the filtering tube may be revolved for cleansing. The efficiency of this filter is good, but natural stone may contain seams and fissures not visible on the surface; thus care must be exercised in selecting. Due to the thickness of stone tube, it is difficult to sterilize and procure return to original free flow. The manufacturers of this filter have recently introduced a clay filtering tube which seems to be remarkably efficient. Dr. Adolph Sehrmann, Bacteriologist to the Chicago Board of Health, says: "Another filter was tested in this laboratory from December 22, 1896, to January 21, 1897, and was found germ proof during this period." In this test I understand that the filtration of tap water for this period was continuous, and during the time no bacteria passed the tube.

The Ellis Charcoal filter is a type of many designed for attachment to faucet, containing in this particular filter granulated charcoal to the depth of one inch. Innumerable filters are constructed on this principle, varying only in the material supposed to remove impurities. Charcoal, various sands, granulated iron, spongy iron, polarite and many other materials are used. Filters of this character remove only large particles, and instead of decreasing the number of bacteria in the effluent, there are, as a rule, a larger number due to development in the filtering media. A test of the Ellis filter attached to tap gave the following results :

Unfiltered water, bacteria per c. c	455.
Filtering 10 minutes	405.
Filtering 20 minutes	380.
Filtering 30 minutes	445.
Filtering 50 minutes	450.
Filtering 60 minutes	435.

(W. G. Bissell, M. D., Report to Buffalo Health Department.)

The Acme filter consists of a metal receptacle containing three series of filtering material, composed of asbestos and moulded carbon, through which the water is forced by pressure in the mains. No efficiency tests are at hand, but analogous filters have shown but little value.

In the Carter stone-ware filter the water first passes through a sponge and then through the filtering material proper, consisting of

charcoal and Rockaway sand. It operates by gravity, and, like all filters of this kind, possesses but little power to remove bacteria from water passing through it.

Heat is the most valuable and most generally applicable domestic method for the destruction of pathogenic organisms in water. A vigorous boiling for five minutes will effectually destroy all dangerous bacteria, but the method renders a water unpalatable. Fremont (*La Medecine Moderne, Feb.* 23, 1895,) states that heating to 80° C. for twenty minutes will destroy pathogenic organisms without deprivation of contained gases or precipitation of salts, and therefore without modification in taste.

Processes for the removal of special impurities are sometimes required. Iron can be removed by mechanical filtration with alum (Drown, *Eng. News, June* 4, 1896). Algæ and other vegetable growths often develop to such an extent, particularly in stored water, that methods of prevention become necessary. Spontaneous pollution of this character is well illustrated by difficulties met with in the water supply of Cheltenham, Eng. (Garrett, *Brit. Med. Jour., Jan.* 7, 1893.) The water supply of this town is derived from the River Chelt and stored in three reservoirs, two of which were open and the other closed. Following numerous complaints of bad taste and odor, investigation revealed immense growths of chara in the open reservoirs. It grew most luxuriantly during the summer, breaking up in the autumn, and rendering the water turbid and foul smelling. All attempts at destruction of the plant were unsuccessful, and Garrett finally advised the use of covered reservoirs only.

The following conclusions may be deduced from the preceding paper:

1. Purification of water should be municipal, not domestic, because domestic filtration cannot be relied upon.

2. Domestic purification can be best obtained by heating to 80° C. for twenty minutes.

3. All evidence available at the present time favors the superiority of "natural" filtration for purification on a large scale.

4. With few exceptions, all American cities furnish their inhabitants a water that is at least suspicious, and in most cases polluted.

5. A continued typhoid mortality of over 20 per 100,000 means a polluted water and a preventable sacrifice of human life.

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VI. METHODS OF PREVENTING THE POLLUTION OF WATER.

BY EDWARD K. DUNHAM, M. D.,

New York.

In order to obtain an abundant supply of water, we are, in practice, obliged to make a choice between two great natural sources of water.

We may either draw our water from the pure ground water of an uninhabited, or but sparsely inhabited, region, or we may utilize the natural collections of surface water which form the streams or ponds of such a region.

In the former case, in order to prevent pollution of this naturally pure water, we must so arrange our mode of collecting and distributing the water as to exclude any risk of pollution at its source or while it is in transit to the consumer. In the latter case we must guard the natural surface waters from pollution. In both cases the problem of preventing pollution resolves itself chiefly into a study of the practicable means of excluding sewage from all parts of the system of water supply.

Where the soil containing the ground water is so pervious that the latter can be obtained in sufficient quantity at reasonable cost the problem is a simple one, and will be briefly considered presently. Preventing the pollution of surface waters is a more complex matter, and had best first engage our attention.

The streams of a region constitute an abundant source of water for the reason that they are the natural drains of the region. They receive the rain which falls upon the ground, partly in the form of surface water which speedily flows into them, partly in the form of ground water which reaches the stream only after percolating through the soil, in which it may remain for several months before it finally emerges to form open or subfluvial springs.

These two sources of the water of streams and ponds differ widely from each other with respect to the chances of their containing sewage. As we shall see in a moment, the passage of the water through the upper strata of the soil brings it under conditions which strongly tend to deprive it of putrescible organic matter and to free it from bacteria. And observation has shown that in many cases the ground water of a region is entirely sterile. But the surface water that makes its way into very many of the streams of the country is

open to great risk of contamination with sewage, and is, in fact, frequently made the vehicle for its disposal.

As civilization advances and the population becomes more concentrated into towns and cities, the demand for an abundant supply of water becomes greater and more urgent, and at the same time the risk of sewage pollution of the surface water becomes proportionately increased. The demand for some satisfactory means of disposing of sewage without permitting it to pollute the streams appears, therefore, to be an imperative one, and we must turn our studies in this direction.

The natural fate of the organic matters contained in sewage is to undergo putrefaction, during which they furnish food for a numerous variety of bacteria. This decomposition, with its associated multitude of putrefactive germs, is, in all probability, highly unfavorable to the continued existence of specific germs of disease, but at the same time gives rise to substances which are repulsive to the senses or injurious to health. We cannot prevent, though we may postpone, these putrefactive changes by any means short of the actual destruction of the organic matter capable of undergoing them. We must, therefore, consider whether we cannot permit and control their occurrence under conditions which shall bring about a speedy but innocuous natural termination of the process before the sewage can find its way, as it inevitably must, into the natural drains of the country — the streams.

This can be accomplished if we allow putrefaction to take place in such a way that the oxygen of the air has free access to the materials suffering decomposition. Under these circumstances two groups of bacteria have an opportunity to develop and to bring about chemical changes which result in the so-called mineralization of the organic matter from which they obtain their nourishment.

The first of these groups comprises the putrefactive bacteria, which split up the organic matter and form the noxious substances that we designate as the products of putrefaction. Those products are then seized upon by the members of the second group of bacteria, which includes the nitrifying species, and caused to combine with the free oxygen present, thus converting them into substances, which, in themselves harmless, are no longer favorable to the support of undesirable germ life. They are, however, of considerable nutritive value to plants of higher organization.

The superficial layers of a porous soil furnish the conditions

required for this process of mineralization, if the putrescible materials are not applied to it in such quantity as to exclude a sufficient supply of oxygen for the second group of bacteria to affect the changes incident to their free and natural growth. And this can be avoided if the fluids containing the organic matter are applied to the soil intermittently.

This process, though often so considered, is not a true filtration, but simply a means of promoting speedy mineralization of organic matter. Its *modus operandi* may be conceived about as follows: the fluid portions of the sewage make their way slowly through the interstices of the soil, but the organic matter adheres to the surfaces of the solid particles of the latter, and there is subjected, in thin layers, to the action of the bacteria, in the presence of oxygen. During this process any specific bacteria of disease suffer a lively competition with saprophytic species under conditions which are in themselves unfavorable to the continued existence of the parasitic forms, so that there is every reason to believe that they soon become innocuous or die out. In either event they would not appear in the ground water in a condition capable of occasioning disease. As the process advances the saprophytic bacteria also die out, and this is the probable explanation of the observed fact that ground water is so frequently nearly if not quite free from bacteria.

In seaboard localities considerations of economy may make it desirable to discharge the raw sewage into a large body of tide water, or into the sea, but since in those cases there is no question of polluting otherwise potable water, their consideration does not fall within the scope of the present discussion.

In the majority of cases true economy, which must take into account not only the cost of disposing of sewage, but also that of securing an abundant supply of good water, as well as that of failing to do so, will probably dictate the adoption of some means of sewage disposal based upon the processes of mineralization which have been outlined. In many cases this might be combined with some form of agriculture adequate to defray at least a part of the expense, the mineralized sewage being nutritious to the higher plants. But such farming is by no means an essential part of this method of sewage disposal, unless vegetation be desirable in maintaining the porosity of a given soil.

It would be out of the question to consider, in a short paper, the details respecting the character of the soil and the methods of ap-

plying the sewage to it, which would be appropriate under the exceedingly various conditions pertaining to different localities. The results of an enormous amount of systematic work looking to an elucidation of those details has been published in the reports of the Massachusetts State Board of Health, which deserve the careful study of all those interested in the subject.

The aim in every case should be to establish and maintain the process of mineralization so that the changes it can bring about in the sewage shall be completed before the latter has receded into the soil to a depth unfavorable for the continuation of the process. When this is not done there is a chance for the sewage to appear in the ground water, where the process is checked, and, eventually, to find its way into the streams without having undergone the purification demanded. The details of management best adapted to accomplish that purification are, in the main, dependent upon the character of the soil available for the purpose. The results of experiment indicate that a fine sand is the material most suitable for the destruction of large quantities of organic matter, and that if the sewage be properly applied the virtues of the sand in this respect will be retained indefinitely. But other soils than sand may be utilized if their capacity be carefully studied and the details of management regulated accordingly.

It frequently takes some time for the process of mineralization to become fully established, and it is, therefore, essential that, in every case, the efficiency of a plant for sewage disposal should be studied, both bacteriologically and chemically, not only when first started, but as a necessary part of its intelligent management.

The principles which have now been briefly stated apply, not only to the disposal of sewage from large communities, but also to that of sewage and other liquid waste from single country dwellings. They furnish a means of abolishing the too common cess-pool, in which putrefactive changes take place under conditions preventing the complete mineralization of organic matter. What is required in such cases is an area of ground sufficiently extensive to obviate its saturation by the quantity of sewage it must receive, and some system by which the sewage can be applied either upon, or a few inches below its surface, intermittently. The whole area of ground can be divided into two or more plots which shall in turn receive the sewage. Such an arrangement gives each plot a considerable time in which to dispose of the sewage it has received and to become fitted for another dose.

The whole system should be free from receptacles in which the liquids could accumulate for more than a few hours before reaching the soil. Simple systems of this sort, which have stood the test of extended trial, are described in a series of short articles which appeared, not very long ago, in the *New York Evening Post*, and have been reprinted by that journal in small pamphlet form under the title, "Health in Country Houses — The Disposal of Sewage."

Sewage disposal or purification by the foregoing process of committing it to the superficial strata of the soil, appears to yield a product of so good a quality that it may be discharged from the underdrains of the soil or sand bed into the streams without risk to those employing their water for drinking purposes. Both chemically and bacteriologically it compares favorably with spring water, except that the nitrates are present in larger quantities. These are among the end products of the mineralization, and do not militate against the conclusion that the effluent containing them is not to be regarded as a polluting fluid. This harmless character can only be assigned to the effluent, however, when the method is intelligently conducted.

Turning our attention now to the cases in which the ground water is drawn upon as the sole supply of water, we can understand the conditions under which it may be regarded as pure. If the deeper strata in which it lies are open enough to allow the water to flow with sufficient freedom, it may be collected by means of pipes driven into the ground. No simpler or safer method of tapping this supply can be easily imagined.

Where such driven wells are insufficient, dug wells or galleries may be constructed in which the ground water will collect and can be stored until required for use. These should have water-tight covers, and their sides should be impervious from the top to a distance of several feet (5 to 8), below the surface of the ground. Below this level the sides should be porous to permit the entrance of the water. The impervious portion may be constructed of brick, stone or earthenware pipes laid in cement and reinforced, if necessary, by concrete, the space around which is filled with sand, covered by a little soil and sodded. The lower part of the shaft may be constructed of stones laid without cement or mortar.

The rim of the well should be a little above the level of the surrounding ground, and the cover be cemented to it. Arrangements for ventilating the air space above the water in the well should also be provided, but in such a manner that reflux of water into the well would be impossible.

The fact that the well has been constructed in the manner described does not in the least warrant a neglect to provide proper means for the disposal of sewage, which must always be regarded as the most radical and enlightened measure against the pollution of water. Cesspools should especially be avoided, for they are usually so deep and so defective that the sewage they receive can find its way into the ground water, where the natural processes of mineralization can not take place.

The writer has laid special stress on the process of mineralization for the disposal of sewage, because he regards it as the most conformable to nature, and likely to be the most efficient in practice. Methods by which the organic matter of sewage is reduced in quantity by chemical or electrical means appear to him less enlightened because they require much greater skill for their proper conduct, and the chances for pathogenic germs to escape destruction appear greater. They are open to the risk of sudden failure through accident, are likely to be expensive, and are apt to yield products that are offensive.

338 EAST 26TH STREET.

VII. LIFE HISTORY OF THE TYPHOID FEVER GERM OUTSIDE THE BODY.

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The consensus of scientific opinion is that the typhoid bacillus is the specific cause of typhoid fever; that it is cast off from the body of one sick with the disease in the excreta; that, *under favoring conditions*, it retains its vitality for a long time outside the body. What these conditions are, practical sanitarians are much concerned to know. We do know that this germ retains life in all degrees of cold; that it multiplies in the presence of suitable pabulum and moisture, such as is furnished by milk, water and soil; that it is destroyed by heat, by certain germicides, by other micro-organisms, by unsuitable and insufficient pabulum, and probably by dessication.

It is in the *soil*, the *sewer*, privy pit, cesspool, the *well* or *stream*, and the *atmosphere* that we want to study the life of the typhoid germ. And our conclusions must largely be drawn from clinical observation.

First, as to their life in the *soil*, the chief receptacle of typhoid excreta, in the country. It is well known that these germs live long

in this environment, and that hot, dry summers are followed by increase of the disease, which is attributed to a causal relationship with varying levels of ground water. Buhl and Pettinkofer place this interpretation upon this observation, viz.: that low ground water permits the air to penetrate the soil, and that thereby the germs are conveyed to and pervade the atmosphere; Liebermeister explains it by saying that the water, becoming low in springs and wells, the poison is thereby more concentrated. Neither explanation is in accord with the probable habit of this particulate germ.

To illustrate my own proposition as to the history of the germ in the soil and its method of reaching the subject, I will briefly state an observed outbreak, which is a type of many constantly occurring in the country. In a rural hamlet, remote from lines of travel, in which, for many years past, there has seldom been an autumn without two or three cases of typhoid fever, there suddenly develops an extensive epidemic of it — thirty cases in twenty-three dwellings, with five deaths. There has been a long period of dry weather, and the outbreak is preceded by sharp rain-falls. Mapping the little hamlet, strung for half a mile along the highway, and marking each house where the disease comes, in the date and order of its occurrence, we find successive cases coming in no geographical order, but simultaneously at remote points, indiscriminately. We find each has its separate water supply, and there is no common sewer, of course. What caused this fulminant outbreak thus affecting all parts of this village at once? There is no reasonable interpretation of the observations but this : for years past the soil has been sown with typhoid fever germs — these have remained vital for one year, possibly for a number of years — under the favoring conditions of unusually low level of ground water with oxygen supply and whatever comes with it, they have quickened and, perhaps, multiplied — following this came the rain-falls, and they were carried in the soil channels to all the sources of water supply over the entire area simultaneously, and all the people were simultaneously exposed.

My proposition then is : in the soil the typhoid germ has an environment where it may *remain* for an *indefinite length* of time vital; that, as universally agreed, it secures more active life or multiplication when the water is low in the soil ; that it is then conveyed to all wells and streams to which its habitat is tributary, and in this way, and in no other, causes increased prevalence of the disease. There is no such thing as aerial infection, and the interpretation which im-

plies a concentration of poison in a low well is out of accord with the principle of a particulate germ. How long these bacilli will live in a favoring soil I do not think we can say or place a limit upon.

What is the fate of the typhoid germ in the *sewer*, its chief receptacle in the city? The moisture, absence of light, and abundance of dead organic matter there all favor its vitality. But it is met there by a vast quantity of inimical bacteria, which thrive well in sewage, and a *fundamental fact in the life-history of this germ is that it is destroyed by other bacteria.* In competition with these it dies speedily. In the drains from the Eastern Hospital at Homerton (reported in *Lancet*) typhoid bacilli were found, but none were found in samples taken a quarter of a mile away. Their complete extinction in the sewer is a matter of a few days at most; they begin a perilous journey when they enter it, and their only salvation is in a speedy transit to a more salubrious environment.

In the cesspool there is no reason why their life should be differently affected.

In the privy pit conditions are somewhat different, and many local outbreaks have been attributed to disturbed vaults infected a year before. But there is lack of accord in these observations, and analogy would make it doubtful whether this germ can survive for any lengthy period in a fecal medium.

What is the relation of this germ to *sewer air?* The disease has long been attributed to this source, but bacteriological study gives no ground for believing that sewer air plays any part whatever in conveying typhoid fever. The prolonged sewer air investigations of J. Parry Laws, extending over a period of three years (Report to the London County Council, 1893) failed under all conditions to find the bacilli, even when found present in the sewage. The challenge of a medical journal (*Western Reserve Medical Journal*, 1895,— in connection with a notable discussion in Cleveland), for the production of a single well authenticated case of typhoid fever contagion by sewer air met with no response. It is not probable that this germ is given off in sewer air.

Neither does it exist in the general *atmosphere.* Much has been said of this. But the idea of a typhoid-infected atmosphere cannot be entertained (Sternberg). It is a particulate body; dessication destroys it. Infection with it is not through the respiratory tract. It can only exist, transiently, in the atmosphere when lifted in particles of dust, and thereby conveyed direct to the digestive tract or to water or food.

What is its life history in *water?* That it will not live there indefinitely is agreed, but under favorable conditions it may live for months. These conditions are presence of pabulum, absence of heat and freedom from other micro-organisms. Edwin O. Jordan (*Medical News, Sept. '95*) found that in sterilized Lake Michigan water it retained vitality 93 days; in distilled water its greatest longevity was 18 days; adding B. coli, the B. typhi disappeared very soon. We may be sure that in water fairly free from hostile bacteria, whether in running streams impounded, or in wells, it retains life for a considerable period. Freezing does not affect it. This accounts for the winter epidemics of cities taking water from contaminated streams; the cold destroys or inhibits hostile bacteria. The conditions are diverse from those of soil infection and the consequent autumnal prevalence of the country.

In a large, newly-built institution, with every sanitary appliance and unconnected with the surrounding community, supplied with water from a great rapid stream which chemical and bacteriological analysis failed to find other than absolutely pure, an extensive outbreak of this fever developed, reaching all the buildings, domiciles and varied inhabitants of every part of it. The exclusion of all other possible sources of infection and the phenomena of its development all determined it to come from this water, which was potentially receiving typhoid excreta from a city in which the disease prevailed to an extreme degree one hundred miles away. The purity of the water, so far as the presence of other micro-organisms is concerned, and the rapid flow of the stream made this entirely possible. Details of this, and much other personal and collatable evidence, not within the scope of this paper, confirm the proposition as to the conditions of life in fresh water. These germs will also live for a time in water that is brackish, in seltzer water and the like.

I need not touch upon the life history of this germ in milk, where it finds its ideal environment, on soiled linen, etc. Our principal concern is its life in the soil, the atmosphere and the water.

The typhoid germ is ingested, not inhaled, and, save in the exceptional cases of ingestion with other unsterilized food, it always enters the system in water. Bryce puts the whole matter into an apothegm: In cities that obtain practically all their drinking water from a public supply whose source is beyond possibility of contagion, typhoid fever will practically disappear from the causes of mortality.

17 WASHINGTON AVENUE.

VIII. BACTERIAL AND ALLIED TESTS AS APPLIED TO THE CLINICAL DIAGNOSIS OF TYPHOID FEVER.

BY JOHN SLADE ELY, M. D.,

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Among the many valuable contributions of pathology to practical medicine none are, perhaps, of wider usefulness than those which make possible the determination of the etiological factor of an infectious disease during its continuance, when such evidence is often of the greatest value as finally determining the clinical diagnosis. A very widespread interest consequently attaches to the tests available for this purpose.

These, at the present time, involve three radically different lines of investigation. In the first place, the specific micro-organisms themselves may be sought in the dejecta, in the blood, or in the inflammatory products of the disease, and where, as in tuberculosis, the germs are given off in large quantities and with great constancy, this procedure may be both easy and of great diagnostic value.

Again, the diagnosis may be determined, not by the finding of the specific germs themselves, but by the detection of their products, the specific toxines elaborated by them in the course of their growth within the body. It must, at once, be evident that at present much greater difficulty attends this diagnostic procedure than the first, for our knowledge of these toxic substances and of their chemical relations is as yet but incomplete, and the long and complicated chemical processes required for their detection place them beyond the reach of the clinician.

A third diagnostic procedure, and one which would seem to be on the eve of a great development, is directed to the detection of certain substances in the blood and other fluids of the patient, which are apparently elaborated by the body in the course of its reaction to the specific bacterial products. With some of these substances, the antitoxins, we have already some acquaintance, and there is much in favor of the view that they are different in the different infectious diseases; are, in fact, almost, if not quite, as specific as the toxins themselves. But evidence is fast accumulating that these are not the only specific substances elaborated by the body in the course of these diseases. The recent researches of Pfeiffer, Gruber, Durham,

and others, have made it apparent that the blood of animals made artificially immune to cholera and typhoid fever, and the blood of patients sick with typhoid fever, possesses a remarkable power over the bacteria of those diseases when brought into contact with them in cultures, causing them to "agglutinate" and inhibiting their motility. If subsequent investigations prove this reaction to be specific in each case, and to occur with constancy in the disease, an important means of diagnosis will have been gained.

With these fundamental principles in mind, I will ask your attention to a consideration of the application which has been made of them to the diagnosis of typhoid fever. And first, let us inquire what may be hoped from efforts to detect the typhoid bacillus itself.

Almost the first effort of Gaffky [1] after he had finally established the etiological relationship of the bacilli to the disease was directed to the practical application of this discovery to diagnosis. With this view he examined the stools and blood of a number of typhoid fever patients in the hope of finding the bacilli, but always with negative result. Although the success of subsequent observers has been somewhat greater, and Pfeiffer,[2] Fraenkel and Simmonds,[3] Seitz,[4] Chantemesse and Widal,[5] Karlinski [6] and many others [7] have detected the bacilli in the stools at various times in the course of the disease, their failures have very greatly outnumbered their successes, and to-day one of the most noteworthy facts with regard to the disease is the relatively rare presence of its specific cause in the feces in sufficient quantity to make it readily detectable, although almost always finding its entry into the body through the alimentary canal.

In this connection it may be interesting to recall one of the most recent of these investigations, that conducted by Wathelet.[8] In the course of his study Wathelet made fifty-one separate examinations of the stools of twelve patients suffering from typhoid fever, more than 600 suspected colonies having been carefully investigated. Of these only ten colonies, from four of the cases, met the requirements of a positive identification of the typhoid bacillus, and these were found at only one examination in each case, though from four to eight examinations were made in each of the positive cases. Thus, of fifty-one separate examinations, the bacilli were detected in only four, or about 8 per cent.

But while these results of Wathelet have been quoted as fairly representative of the findings of the majority of those who have more recently investigated this question, it should not be inferred

that none have been more successful. Thus, Karlinski[6] has claimed the constant detection of the typhoid bacillus in the stools of numerous patients, but as his published results were obtained prior to 1890, and consequently before the requirements of a positive identification of the typhoid bacillus were well understood, they should hardly be accorded the same weight as the results of equally careful investigations by more recent observers. Furthermore, in the report of some examinations made with a view to testing the efficiency of Elsner's differential medium, Lazarus[9] and Brieger[10] both record the successful detection of the bacilli in the stools in a large percentage of the cases. Kruse,[11] also, in the very recently published third edition of Flügges "Microorganismen" mentions the fact that he has been successful in a considerable number of cases in cultivating the bacilli from the stools.

While, therefore, we must admit the possibility of detecting the typhoid bacillus in the stools of typhoid fever patients, we should nevertheless, appreciate the fact that the probability of such examinations being attended with success is relatively small.

The results which have rewarded similar examinations of the blood of patients suffering from typhoid fever, whether taken from the roseola spots or from the finger-tips, have been even more unsatisfactory, for, while it is indisputable that the bacillus finds its way into the blood and must be often present in it in very considerable numbers, all observers are agreed that it is by no means constantly present in that fluid. We have already noted the failure of Gaffky to detect the bacilli in the blood of typhoid fever patients, and similar results have attended the efforts of Fraenkel and Simmonds,[12] Seitz,[13] Chantemesse and Widal,[14] Lucatello,[15] Janowski,[16] Grawitz[17] and Merkel and Goldschmidt.[18] On the other hand, Rütimeyer[19] found the bacilli once in six cases in blood from the roseola spots; Neuhauss,[20] nine times in fifteen cases; and Thiemich,[21] four times in seven cases in blood from the same source; and Meisels,[22] Almquist,[23] Silvestrini,[24] Stern[25] and Flexner,[26] all report cases in which the bacilli were detected by means of cultures in the blood of the finger-tips or of the arm veins during the course of the disease. But, here again it should be remembered that these results were obtained before the exact requirements of a positive identification of the bacillus were fully understood, and it is quite possible, indeed probable, that in some of the cases in which positive results are recorded the germs would not have stood the more rigid tests required by our

more recent knowledge. However, even accepting these now questionable results as positive, the bacilli have been detected in the blood in a very small proportion only of the cases examined, and then only exceptionally in the course of the disease.

Examinations of the urine for diagnostic purposes have yielded somewhat more encouraging results, and there is reason to believe that, after the first few days of the disease, and with the aid of certain modifications in the method of examination recently suggested by Wright and Semple, the bacilli may be detected in the urine in a very considerable proportion of the cases.

But even the success of the earlier observers in detecting the typhoid bacillus in the urine was very considerable. Thus, Neumann [27] was able to find them by means of cultures in eleven of forty-six cases, and Karlinski [28] in twenty-one of forty-four cases (in one case as early as the third day of the disease), and they have also been detected in the urine by Seitz,[29] Koujajeff,[30] and Silvestrini.[31] The results, however, which particularly encourage the opinion that in examinations of the urine we may have a very useful means of the bacterial diagnosis of typhoid fever were reported in 1895 by Wright and Semple.[32] By the simple device of drawing the urine by catheter into sterile test-tubes and exposing it then to the body temperature in the incubator for twelve hours to permit of the multiplication of the few bacilli which may be present, these observers succeeded in detecting the bacilli in six of seven cases examined. As the result of this experience they are led to the belief that a few bacilli are practically always present in the urine after the first few days of the disease, and this, I may say, is in great part borne out by recent bacteriological examinations of the kidneys of persons who have died of typhoid fever, in which, in most cases, the bacilli have been found in very considerable numbers.

But, in contrast, again, to all this encouraging testimony we should not overlook the negative results of Chantemesse and Widal,[33] who report uniform failure as the outcome of their repeated efforts to detect the typhoid bacillus in the urine.

Of all the means of obtaining the bacilli from patients for diagnostic purposes none has been attended with such success as puncture of the spleen. This procedure is, of course, not unattended with danger, and is now considered to be rarely, if ever, warranted for the sake of diagnosis alone. It has, nevertheless, been undertaken in a very considerable number of cases, and with a high per-

centage of successes so far as the detection of the bacilli was concerned. Thus, Meisels[34] cultivated the bacillus in all of 9 cases examined in this way; Redtenbacher[35] in 10 cases; Phillipowicz[36] in 4 cases; Lucatello[37] in 10 of 17 cases; Neisser[38] in 11 of 12 cases; and Chantemesse and Widal,[39] Ali Cohen[40] and Guarnieri[41] also report successes. But here again there is slight conflict in the evidence, for Stagnitta[42] has failed to detect the bacillus in this way in all of 14 cases investigated.

Now, it must be evident that if bacterial analyses are to be of much real value in diagnosis it is indispensable that the germs be present with great constancy in some readily accessible fluid of the body or in the dejecta, and preferably during the early stages of the disease when diagnostic evidence is of most importance. It is also apparent from our review of the results which have attended such examinations in typhoid fever, that, if we except the spleen pulp and possibly also the urine, the typhoid bacillus is not detectable with sufficient frequency to render tests of its presence of much diagnostic value. Examinations may, of course, be undertaken in the hope of detecting the bacilli, but the likelihood that they will be rewarded by success should be understood to be small, and no particular diagnostic importance should ever be accorded to failures to find the bacteria.

But, for another reason also, examinations directed to the detection of the bacilli are of very limited diagnostic value—the positive identification of the typhoid bacillus is accomplished with very great difficulty.

The earliest studies of the typhoid bacillus disclosed its close resemblance to the ordinary colon bacillus, Bacillus coli communis, so abundantly present in feces, and the aim of the earlier investigators was to determine an available means of differentiating these two species. Subsequent studies have, however, shown the problem to be much more complex than was at first supposed, for, aside from the fact that no differential stain, applicable to the typhoid bacillus alone, has been forthcoming, they have shown that the number of closely allied germs from which the typhoid bacillus must be distinguished is very considerable. In the case of many of these a very long and complicated process of bacterial differentiation is required for the establishment of the identity of the bacillus. Thus, Flügge[43] includes no less than fifteen separate and distinct species in the group of typhoid-like bacilli, and, in addition, describes a

number of probably different varieties not yet definitely separable, under the title "Bacillus pseudotyphosus." Germano and Maurea [44] go even further, distinguishing as many as thirty distinct species of these typhoid-like bacilli. Of course, not all of these are liable to be met with in the dejecta and blood of persons suspected of typhoid fever, but a very considerable number of them are occasional inhabitants of the intestine, and are consequently liable to lead to uncertainty when the stools are examined for diagnostic purposes. In the urine the likelihood of the presence of other disturbing germs is much less, but even here one cannot be sure that a typhoid-like germ is in reality the typhoid bacillus, without a long and tedious bacterial analysis.

Some of the difficulties attending this analysis may be inferred from an enumeration of the tests which must be fulfilled for a positive identification of the typhoid bacillus, as recently stated by Loesener [45] after an exhaustive examination of the literature of the subject. His conclusions sum up the results of 689 separate articles in so far as they bear upon the cultural characteristics of the germ, with the result that ten characteristics are found to be distinctive of the typhoid bacillus, conformity with all of which is necessary to its positive identification. Briefly stated these are as follows:

1. The appearance of the superficial colonies in gelatine plates.
2. The very active motility.
3. The large number of flagella originating from all parts of the bacilli.
4. Decoloration by Gram's method of staining.
5. Growth on media containing grape, milk, and cane-sugar without gas formation.
6. Growth in milk without causing its coagulation.
7. Growth in proteid — containing media without generation of indol.
8. Production of acid when grown in whey, but not in excess of three per cent. as tested by one-tenth normal soda solution.
9. The growth on potato.
10. The failure to grow in Maassen's normal solution with glycerin.

As has been said, conformity with all of these tests is necessary to the positive identification of the typhoid bacillus.

In view of the complexity of this subject efforts have been repeatedly made to discover a culture medium which would either

support the growth of only the typhoid bacillus or on which the growth of the typhoid bacillus should be so characteristic as to be unmistakable. Though at first some of the culture media proposed for this purpose have given much promise of usefulness, they have for the most part been ultimately proved to be unreliable, and their use has consequently been abandoned. The most recently proposed of these media, Elsner's acid potato-gelatin containing one per cent. of potassium iodide, does, indeed, appear to serve a distinctly useful purpose in the separation of the typhoid bacillus from feces and from mixtures containing large numbers of bacteria of various kinds, for it has been found to support the life of only two other species liable to be met with under such circumstances, the Bacillus coli communis and the Bacillus fæcalis alcaligenes.[46] It is often of great assistance in a bacterial analysis to be able to separate in this way two or three species of bacteria from a mass containing many different species.

While it is not the purpose of this paper to discuss in detail the various means of identifying the typhoid bacillus, nor in this connection to more than indicate some of the difficulties attending this identification, I cannot leave this subject without brief mention of Pfeiffer's serum test, which, if the statements regarding it made by its discoverer shall prove correct, would seem to be a most reliable means of identifying the bacillus. And, furthermore, this test is of interest as having afforded the basis for an entirely new clinical diagnostic procedure presently to be referred to as Widal's serum test.

According to Pfeiffer,[47] the poison of the typhoid bacillus is intimately associated with the bodies of the bacteria, remaining in them even after the death of the germs. By the exhibition of small but increasing doses of this toxin, animals may be made artificially immune to the effects of fatal doses, and their blood is then found to possess decided bactericidal qualities as regards the typhoid bacillus, while it has no such effect upon the colon bacillus or other allied species. Pfeiffer's test then consists in mixing a portion of the suspected culture with a small quantity of the serum of an artificially immunized animal and then inoculating the mixture into the peritoneal cavity of an animal susceptible to the toxins of the typhoid bacillus. If the culture be of the typhoid bacillus, it will have been made innocuous by the antitoxins of the serum, and no pathogenic effect will result; but if it be of another germ than the typhoid

bacillus, the inoculation will be followed by the result characteristic of that species, as if the serum had not been used.

This test has been carefully studied by Pfeiffer, Gruber and Durham,[48] Widal [49] and others, and while some points regarding it are still in dispute it is now quite generally accorded much value in the identification of the typhoid bacillus. But it must be evident from its very nature that it can hardly have a wide field of usefulness since it requires for its application the serum of an artificially immunized animal, to obtain which a tedious process of animal inoculations is necessary.

It appears, then, that at the present time but little is to be expected from bacterial examinations as regards the practical clinical diagnosis of typhoid fever. For, to sum up what has already been said, the bacillus is by no means constantly present in the dejecta or blood of the patient, and when present is very difficult of positive identification because of our lack of any differential stain for it and of any simple method of determining its identity in cultures.

Thus the first and, as a rule, the most available of our means of detecting the presence of the specific bacteria in the body during the course of the disease fails us in the case of typhoid fever. But we are not therefore necessarily wholly without resource, for it will be remembered that two other general methods remain — the detection of bacterial products in the excreta, etc., of the patient and the detection of the specific reaction of the body to the effects of the bacterial poisons.

As yet but little attention has been paid to these procedures as of possible clinical diagnostic value, and I shall consequently have little to say regarding them. With the specific toxins of the typhoid bacillus we have practically no acquaintance. It is true that in 1885 Brieger [50] separated a poisonous substance from pure cultures of the typhoid bacillus, which he believed to be the specific toxin, and accordingly named "typhotoxin," but he has since been led to modify this opinion. And in 1890 Brieger and Fraenkel [51] detected a proteid poison in pure cultures of the typhoid bacillus, which produced death in rabbits in from eight to ten days. But up to the present time, owing to the many and great difficulties attending the separation of the bacterial poisons, we have but a slight acquaintance with their chemical reactions, and, while we believe them to be eliminated by the kidneys with great constancy during the course of the infectious diseases, we have no ready means of identifying them in that liquid.

When, now, we turn to the last of the resources under discussion in the diagnosis of typhoid fever, the detection of the specific reaction of the body to the bacterial invasion, two indications demand consideration, both to be found in the blood.

The first of these is the absence of the leucocytosis [52] so common in other infectious diseases. It has long been known that in lobar pneumonia, pyæmia and suppurative processes in general, in scarlatina, measles, acute lepto-meningitis, chronic phthisis, and a very considerable number of other febrile conditions, the blood contains an increased number of leucocytes, usually of the polynuclear variety. The most recent conception of this leucocytosis associates it very closely with the chemiotactic quality of the bacteria responsible for these various conditions, and we must, therefore, consider it as an expression of the reaction of the body to these bacteria. Now, the absence of leucocytosis is one of the most constant features of typhoid fever ; indeed, in many cases there is an actual diminution in the number of leucocytes in the circulating blood. But in this typhoid fever is not entirely alone, for in acute tuberculosis, malaria and typhus fever it is also exceptional to meet with leucocytosis. While, then, the absence of leucocytosis in any given case cannot be accepted as a final diagnostic indication of typhoid fever, it is, nevertheless, suggestive of that disease, and may be considered as important diagnostic evidence as between it and pneumonia or pyæmia. It is, however, to be remembered that in the event of the development of complications in the course of typhoid fever, more particularly if peritonitis or pneumonia arise, a decided increase in the number of leucocytes may be observed ; indeed, the appearance of leucocytosis in the course of an undoubted case of typhoid fever is regarded by Von Limbeck, Grawitz and others as strongly indicative of the development of a complication.

In my introductory remarks mention was incidentally made of the fact that recent researches of Pfeiffer, Gruber, Durham, Widal and others have developed the fact that the blood of persons suffering from typhoid fever possesses a remarkable power over the bacteria of that disease when brought into contact with them in cultures, causing them to "agglutinate" and inhibiting their motility. No sooner was this discovery made than attempts to make use of it for diagnostic purposes were undertaken by Widal,[53] and with such success that immediate and widespread interest was awakened in the test which has since been associated with his name.

This test, as originally proposed, consisted in the addition of serum

from the blood of a patient suspected to have typhoid fever, in the proportion of 1 to 10, to an actively motile broth culture of the typhoid bacillus. Such a culture, as is well known, is slightly cloudy, owing to the diffusion through it of the bacilli. On addition of serum from a typhoid fever patient to such a tube culture this cloudiness was found to quickly disappear as the result of settling of the bacilli, the supernatant broth becoming perfectly clear and the bacilli accumulating at the bottom of the tube as a light flocculent sediment. The microscope showed the bacilli to have lost their motility and to have become "agglutinated" into small clumps. Subsequent studies by Widal and Sicard [54] and by Johnston [55] demonstrated the fact that this peculiar inhibiting and agglutinating action is retained by the blood even after it has been dried for some time, though it was found then to be somewhat less marked, and at the same time a hanging-drop modification of the method was proposed, making it possible to avail of the test with much smaller quantities of serum and to watch its progress with the microscope. Widal's investigations soon attracted attention to the test and reports of its clinical diagnostic value rapidly accumulated, Achard,[56] Catrin,[57] Grünbaum,[58] Breuer[59] and others, almost at once confirming Widal's results. At about the same time Wyatt Johnston [60] instituted the employment of the test by the Montreal authorities for diagnostic purposes. This example was almost immediately followed by the New York Health Board, and it is to a very considerable extent the results of their experience with the test which will be quoted in the remarks which follow.[61]

As the outcome of all these studies several facts of interest relative to the test have been disclosed. In the first place, it has developed that the test is less absolutely specific than was at first supposed, the Bacillus coli communis and several other species of bacteria being at times similarly affected by the typhoid serum, but so far as its diagnostic value is concerned, this lack of an absolutely specific character is unimportant, since the observer is supposed in all cases to know that he is employing a pure culture of the typhoid bacillus. Unless this is clear the diagnostic value of the test is lost. Again, it has been found that the age of the culture employed for the test is of importance; that if the culture be older than twenty-four hours, the reaction is often indecisive. Finally, a proper dilution of the serum to be tested is essential, for it is well known that even the normal blood serum, when undiluted, possesses a decided germicidal action, and that this action is intensified in many conditions of disease. If, then, we are to judge of the specific agglutinating and inhibiting

action of any given specimen of blood, it is important that it be diluted to such a degree as to remove the possibility of interference with the test by this germicidal action. Fortunately, clinical experience with the test has shown the highest degree of accuracy when the reaction has been obtained with serum of a high degree of dilution.

Up to the present time all attempts to discover the ingredient of the blood in typhoid fever to which this peculiar inhibiting action is due have been unsuccessful. It has, however, been ascertained that it is not restricted to the blood, for it has also been observed in the milk, in urine, in tears, in pus and in serum from blisters. It is not bactericidal nor antitoxic, for the virulence of the bacilli, as tested by animal inoculations, is not lost. It is not contained in the corpuscles of the blood, for these have been carefully removed without impairment of the reaction. It is, then, something contained in the serum of the blood which may be secreted in the milk, tears, etc. From the fact that it is lost when the globulins of the serum are removed by precipitation and returns with their return again to the solution, it seemed that the substances to whose presence the reaction is due might be members of that group of albuminoids, but the fact that they are dialyzable throws doubt upon this theory.[62] While we must therefore admit that as yet the exact nature of these substances is unknown, it may nevertheless be inferred that they are a product of the reaction of the body to the infectious material, since they would seem to be absent from the blood of healthy individuals and to appear first in the blood of typhoid fever patients a few days after the onset of the disease.

But the question which particularly concerns us here is the value of this serum test as a clinical diagnostic procedure. This question can, of course, be definitely answered only after the accumulation of a large number of observations as to the occurrence of the reaction, and it is important that these observations should be so extended as to afford a knowledge of its occurrence in health and in diseases other than typhoid fever, since it must be evident that great diagnostic value can be accorded to a test like the present only when it is quite definitely restricted to the disease of which it is a diagnostic sign.

So great has been the interest in this test that already a very considerable number of observations regarding it are accessible, the results of the most important of which are included in the subjoined table:

TABLE OF RESULTS OBTAINED WITH WIDAL'S TEST UP TO THE MIDDLE OF JANUARY, 1897.

	Total No. of cases tested.	CASES OF UNDOUBTED OR SUSPECTED TYPHOID FEVER.					BLOOD FROM HEALTHY INDIVIDUALS OR FROM CASES SUPPOSED TO BE OTHER THAN TYPHOID FEVER.†		
		No.	Day of disease.	RESULT OF TEST.*			No.	RESULT OF TEST.	
				Positive.	Negative.	Partial or doubtful.		Positive.	Negative.
Widal [63]	280	80	4th—21st	45	35	.....	200	0	200
Achard [64]	6	3	7th—12th	3	.....	.....	3	0	3
Catrin [65]	57	36	4th—41st	36	.....	.....	21	0	21
Haushalter [66]	39	39	7th—12th	27	12	.....	.....	.....	.....
Grünbaum [67]	40	8	10th—33d	8	.....	.....	32	16±	16
Durham [68]	4	4	8th—21st	2	.....	2	.....	.....	.....
Delepine [69]	40	30	8th—23d	24	4	2	10	0	10
Green [70]	25	11	16th—38th	11	.....	.....	14	0	14
Johnston [71]	164	129	2d—3d week	128	1	.....	35	0	35
Brener [72]	70	43	6th—6th week+	43	.....	.....	27	4±	23
Chantemesse [73]	11+	11	11th—convalescence	11	.....	.....	+	0	+
Courmont [74]	11+	11	.....	9	2	.....	+	0	+
Stern [75]	16	16	9th—	16	.....	.....	+	1	+
Block [76]	37	37	10th—106th	20	.....	17	.....	.....	.....
Weinberg [77]	48	28	.....	28	.....	.....	20	6±	14
Fraenkel, C. [78]	44+	44	2d—8th week+	34	10	.....	+	0	+
Beco [79]	16+	16	.....	11	5	.....	+	0	+
Sabrazès & Hugon [80]	22	17	.....	16	1	.....	5	0	5
Jez [81]	11	4	.....	4	.....	.....	7	1	6
Park, N. Y. City Health Board [82]	350	150	.....	101	1	48	200	5‡	195
Thacher [83]	100	100	.....	98	2	.....	.....	.....	.....
Le Fevre [84]	173	15	.....	15	.....	.....	158	3	155
	564+	832		690	73	69	732+	36	697+
				83%	9%	8%		3%	97%

*Owing to ambiguity of statement on the part of a number of those who have reported results with Widal's Test, it is impossible to vouch for the accuracy of the numbers contained here in the columns headed "Negative" and "Partial or Doubtful." The total number of cases tested is usually stated, together with the number of positive results, but in many instances it is not clearly stated whether the subsequent development of cases in which a negative result was obtained showed them to be typhoid fever. Where this doubt has existed it has been thought safer to class these as cases of true typhoid fever, in which a negative reaction was given, and it is therefore probable that the negative results in cases of typhoid fever, as expressed in this table, are quite a little too high, the percentage of positive results being proportionately too low.

† A plus (+) sign in this column indicates that the observer named reports indefinitely as to the number of cases other than those of typhoid fever examined. A not uncommon expression has been the following: "Though many cases have been tested, the results have been uniformly negative." The ± sign indicates that in several of the cases included as positive the reaction was partial, doubtful, or, as in many of Grunbaum's cases, was obtained with undiluted serum. In some of these cases also [illegible] had had typhoid fever from four to forty years before (Weinberg, Grunbaum).

A glance at this table will show that in at least 83 per cent. of the cases of supposed typhoid fever tested, a positive reaction was obtained; and, on the other hand, that a positive reaction was obtained in only 3 per cent. of non-typhoid cases at the most. This is certainly a very high degree of accuracy, and would seem to warrant the accordance of great diagnostic value to the test.

Of course, many questions regarding the reaction are still unsettled, and, until they are definitely answered, the final position of the test among diagnostic procedures must be in a measure uncertain. One of the most important of these is as to the time at which the agglutinating substance makes its appearance in the blood in sufficient quantity to insure the reaction. In two of the recorded cases (Johnston,[85] C. Fraenkel[86]), this has occurred as early as the second day of the disease, and, if further tests show similar results, we shall have a diagnostic sign of great practical value. But, conversely, if it shall develop that the reaction is not, as a rule, present until the end of the first week, or even later, in the disease, it must be clear that the value of the test will be distinctly less, since by the end of the first week the symptoms are usually sufficiently developed to permit a diagnosis. Up to the present time very few positive results have been obtained in tests made prior to the sixth day of the disease.

Again, the relation of the reaction to other diseases than typhoid fever must be ascertained. Thus far distinctly positive results have been noted in cases of pneumonia (Park,[87] Le Fevre[88]); in diabetes (Park[89]); in jaundice (Grünbaum,[90] 3 cases); in tuberculous meningitis (Jez[91]); in septicæmia (Ferrand[92]); in carcinoma ventriculi (Le Fevre[93]), and in otitis externa (Stern[94]). Furthermore, Park[95] mentions a decided positive reaction in the case of three negroes, suffering, respectively, from gangrene of the toe, from acute phthisis, with irregular fever, and from supposed tumor of the colon, with fever (104°) which subsided after exploratory laparotomy.

And finally, certain details of the reaction itself must be studied with a view to determining the best mode of its application, and just what is required for a positive result.* Thus, the time of com-

* While this article is passing through the press an important contribution to our knowledge of many of the details of the reaction has appeared from the pen of Wyatt Johnston and D. D. McTaggert (*Montreal Medical Journal, March*, 1897). They find that results obtained with an attenuated culture are more reliable than those with a more virulent culture; that with an attenuated culture the dried blood method is very accurate; that the degree of dilution is less important when an attenuated culture is employed. Their paper concludes with these words as to the requisites of a positive reaction: "We do not think that anything less than complete clumping and total arrest of motion obtainable by the dry as well as the moist test in a young attenuated culture should be regarded as typical."

mencement of the reaction after the mixing of culture and serum must be more definitely ascertained. The majority of observers record the almost immediate commencement of the reaction in marked cases, but in some cases, on the other hand, a reaction, which must be distinctly classed as positive, has been seen to occur only after several hours. The qualities of the culture best adapted to the test must also be determined; whether a virulent or an attenuated culture lend itself better to the test,[96] and what is the best culture medium, etc. It is already generally conceded that the culture actually employed for the test must not be older than 24 hours, and must show active, though not necessarily violent, motility.

Again, as regards the best source of material for the test, as to the advisability of drying it, and as to the most desirable degree of dilution, much must be learned before the test can assume a place among thoroughly reliable diagnostic procedures. The outlook for it is exceedingly encouraging, but until more perfectly understood, the exact degree of its diagnostic value must be considered as *sub judice*.

If, then, we bring together the conclusions to which we have been led by our study of the present status of bacterial and allied tests as applied to the clinical diagnosis of typhoid fever, we find them to be as follows :

1. Bacterial examinations of the stools, blood, urine, etc., are unsatisfactory for the reason that such examinations must be undertaken with but little promise of success, owing to the uncertainties connected with the detection of the bacilli in these fluids, and to the great difficulty of positively identifying the typhoid bacillus.

2. Up to the present time our knowledge of the toxin of the typhoid bacillus is too meagre to give to tests for its presence any particular diagnostic significance.

3. Widal's serum test promises, when better understood, to become an important clinical diagnostic test of typhoid fever.

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IX. TYPHOID FEVER IN INFANCY.

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By infancy is here meant the first two years of life, and the discussion will be limited to the relation of that period to the infective agent of typhoid fever.

Are infants vulnerable?

My answer is, but little vulnerable. Sporadic typhoid fever is a rare disease in the first two years of life. As the food of infants is largely milk and water, this phase of the subject under discussion has an importance.

Some reasons for believing that typhoid fever in infancy is rare appear in the following.

At the New York Foundling Hospital, in twenty-five years, there is no record of or remembrance of a case. This statement is made on the authority of Drs. O'Dwyer and J. Lewis Smith.

In my own experience of fourteen years at the same institution, clinically, no case has been seen. I may add that from my first entrance into the service, Dr. O'Dwyer and myself have been literally looking for it. Furthermore, in 2,000 autopsies upon subjects under three years of life, for which statement I am personally responsible, no typhoid fever was verified.

Of the 1,800 infants and children usually under the care of the institution, 1,100 are out at nurse in the environs of New York, Staten Island, Hoboken, Jersey City, Westchester county, Astoria, Williamsburg, Long Island City, and intervening points, beside the crowded parts of New York and Brooklyn. All these are under three years, and a majority under two years. For the most part the food of these children is milk and water. Above the first year probably the milk is not warmed, to say nothing of boiling. Children drink copiously of water. There have been now 25,000 infants from the Foundling Hospital living about among the community and no case has returned with recognizable typhoid. They are not specially protected, but rather unusually exposed. Let it be remembered, too, in this connection, that our large hospitals receive their full typhoid crop of adults from just these localities, not a few of them finding their way to my own service at the Presbyterian Hospital. A child over one year old will receive from her ten-dollar-a-month nurse many delicacies (*sic*), but the milk will be

the main feeding, and that milk will often be procured at the corner grocery. Corner-grocery milk is almost a by-word for unreliability.

After watching for twelve to fourteen years for a case of sporadic typhoid in infancy, I entered into an investigation with other institutions. I will refer to one. The New York Infant Asylum in eight years has not had a case of typhoid, 10,000 cases of illness having been observed in that time and 700 autopsies made (Holt).

From the experiences of the New York Foundling Hospital and the New York Infant Asylum the statement seems justified that typhoid fever in the first two years of life is rare.

On the other hand, in the presence of overwhelming infection (over abundance of virulent bacilli in long continued contact), an infant, though naturally little vulnerable, may succumb to the epidemic infection. In the Stamford (Conn.) epidemic, in which 406 individuals were attacked, I saw four infants sick of undoubted typhoid: four in four hundred and six. One was thirteen months old, one of three in a household of four attacked, all having typical typhoid. The manifestations in this infant were fever, prostration, dry tongue, pallor, characteristic eruption, feelable spleen.

One was sixteen months, two were twenty-two months; of the latter age (twenty-two months), one died early in the disease with bronchopneumonia.

This is the only autopsy on a typhoid patient under two years of age I have ever made or have seen. The features of the case were direct exposure to "the milk," characteristic fever, tongue, eruption, spleen, diarrhœa, swollen Peyer's patches and mesenterics.

"The milk," as it was denominated, was distributed by one man to a poor part of the city. It was a cheap milk, and the consumers were of a prolific sort; large families abounded. In this epidemic a certain well, under the same roof with the wagons and cans, was believed to be intimately associated with the infection of the milk distributed.

It will be urged that the unusually careful management of milk designed for infants, its warming and sometimes its boiling, have much to do with the rarity in this period of typhoid. That may be true. Infants under one year are largely wet-nursed too. Above one year I think it is the experience of most that the infant is given largely unboiled milk; they prefer it and are considered large enough to take it. Especially is this so in the associations from which the above experience has been gathered.

My purpose in this paper is to set forth conclusions already formed, and to ask you to subject them to further test by newly acquired methods of exact diagnosis, viz., the serum test.

In conclusion, I would say, the vulnerability to typhoid infection is slight in the first two years of life. In continued contact with an abundant, virulent infective agent, such as occurs in epidemics, an infant's ability to withstand may be overcome.

In infancy sporadic typhoid is rare.

57 EAST 79th STREET.

X. MEDICINAL AND DIETETIC TREATMENT OF TYPHOID FEVER.

BY WILLIAM S. ELY, M. D.,

Rochester, N. Y.

The preceding papers are of great value in giving us much information concerning the causes and prevention of typhoid fever, but who can tell us anything new about its treatment? Every physician of experience knows, or *thinks* he knows, how to treat typhoid fever. The majority of his cases have recovered, and friends and patients laud his skill.

When I commenced practice, nauseous fever mixtures, turpentine and quinine, whiskey and brandy, with close air, an abstinence from water, and disregard of diet, constituted the approved method of treatment of the disease under consideration. Even then the majority of the patients survived.

The profession was slow in discarding a system of medication taught in the text-books and, *ex cathedra*, in the medical schools, and I still remember wondering whether it would be safe to omit turpentine internally for a dry tongue, or externally for a swollen abdomen. *Medicina "non facit saltum"* has been true of our therapeutic progress. It has been by slow degrees that we have become convinced that the function of the physician in the management of self-limited diseases is to modify symptoms which he cannot arrest, and to guide the patient safely to the haven of health, as a skilful captain steers his ship across the sea.

The discovery of the bacterial origin of typhoid fever has stimulated the study of its management, in the expectation that by the destruction or neutralization of a specific germ its deleterious

influences may be arrested or modified. While this is our hope and aim, and may be confidently anticipated in the future, we are not yet in a position to declare it "*un fait accompli.*" The strong hopes of aborting typhoid fever by the "Woodbridge treatment" have not been realized in the experience of many of those most anxious to establish its value. It is but just to Dr. Woodbridge to say, that he deems the failure to obtain his flattering results to be due to an incomplete comprehension of his elaborate method. Hence, his treatment should be accorded further trial.

When the little square boxes of coal-tar derivatives came to us from across the sea, with such wonderful endorsements of their ready acceptability to the palate and stomach, and of their harmless antipyretic effects, how these products were thrust upon our patients, and with what delight we saw the mercury in our fever thermometers tumble! It now seems singular that it took us so long to measure the harmful reaction of these remedies, in the form of nervous depression and heart failure. I do not question the potency of these agents, but I desire to emphasize the belief that they must be used in smaller doses than formerly, and that their effects must be closely studied.

It appears demonstrated that the diarrhœa of typhoid fever is a salutary influence, carrying off noxious bacteria, and lessening the septic infection which they seem to favor. Therefore, the laxative usually given early in the disease may often be continued, with good effect, in the form of a saline.

There is reason to question whether the so-called "fever mixtures" do sufficient good to compensate for their disturbing influence upon digestive processes. Nor is there any agreement in favor of guaiacol, salol, carbolic acid and iodine, chlorine water, and so many other vaunted remedies that might be named. They serve to satisfy the friends of patients that something is being done, but I am led to question their real efficacy. Why should I argue for their potency, when I know that the speaker who follows will throw cold water upon them all? He will show that the external and internal use of water are the best antipyretics yet known. We are then left, in ordinary uncomplicated cases, to place our main dependence upon hygienic conditions and dietetic treatment. Whatever else may be required, fresh air and pure water must be abundantly supplied.

I usually aim to place a typhoid fever patient between two open windows, and the fear of taking cold is a bogey to be expelled from

the minds of the patient and his friends. Whenever possible, two single iron beds should be supplied, the bedding of the one not in use being left in the open air for from four to six hours daily.

The bed-pan often excoriates the sacrum. I have seen terrible bedsores, compromising the life of the patient, follow its use. Hundreds of times, in single cases, this instrument of torture is shoved under emaciated hips, and the skilful nurse must feel for the helpless patient, who soon becomes oblivious to its employment. She has learned to cover the bed-pan with pads of cotton wadding, to be burned after use, and she changes the position of her patient almost hourly from side to back, and from back to alternate side, upon the softest bed she can construct. Thus, the discredit of an extensive bedsore, or great praise for preventing the occurrence of the same, may be due to the nurse. She will remember that there is danger wherever there is prolonged pressure, not alone in the region of the hips, but also about the shoulders, elbows and ears. In bad cases, with brain symptoms, when the patient's eyes are fixed and open, the nurse will frequently move the eyelids over the cornea, to prevent dryness and ulceration of the same.

We do not give internal remedies to moisten the dry tongue of a mouth-breathing typhoid fever patient, or to lessen the sordes upon his teeth; but we expect the nurse to modify these conditions by frequent cleansing and soothing lotions.

In intestinal hemorrhage, often followed by a sudden fall in temperature, we note a condition always serious, and occasionally fatal. It may be treated by five-grain doses of alum largely diluted with water, frequently repeated, by ice upon the abdomen, and by stimulants p. r. n. When there are the pain, shock and collapse, which may indicate intestinal perforation, the skilful surgeon must be called in consultation, and the question of immediate laparotomy is to be decided.

I believe there have been, and will continue to be, cases of typhoid fever, due to an intense septic influence, which will prove fatal under any treatment known at present. They are like septic diphtheria, septic scarlatina, septic pneumonia, and other septic states of the system, in which the poison of the disease is so excessive in amount as to paralyze hopelessly the nervous system.

Stimulants have been used injudiciously in typhoid fever. I am always distrustful of the result in a case which cannot survive the first week without stimulants. Defer them until the second or third

week of the disease, or later. They are a powerful agent in reserve for the exhaustion of pyrexia, and for the depressing influence of the fever poison upon the digestive and nervous systems. Begin with camphor water in half-ounce doses, every two or three hours, and lead up to the milder alcoholic stimulants, as sherry or red wine, with whiskey or brandy to fall back upon. The use of all should be determined by the effect upon the pulse, temperature, respiration and nervous condition. Strychnine is of great value in many cases, and may be given for days in frequent doses, providing you have a competent nurse to watch for its cumulative effect.

As to dietetic treatment, the profession is now generally agreed that liquid food is nearly always preferable, and that in the average case there is no substitute for milk in some form — plain, boiled, peptonized, with lime water or soda, according to the indications. Two quarts a day is a minimum amount for the average case. My patients have not been disturbed by its regular administration by night as well as by day. Indeed, I never make any difference between night and day in the management of serious cases of typhoid fever. Rebellious stomachs, as in some other diseases, are to be managed rather than medicated. An amount of milk given every three hours and rejected can be given in divided portions every hour, or half hour, and be retained. I once saved a patient's life by slipping one half-ounce of nourishment into the stomach every fifteen minutes — ninety-six times each twenty-four hours — for several days. Larger amounts at longer intervals invariably caused vomiting. As nervous force is rapidly consumed by persistent high temperature, its duration must determine the amount of food given. Milk may often be supplemented by beef juice and eggs. In exceptional cases where exhaustion has been marked, I have given twenty whole eggs, or the whites of forty eggs, every twenty-four hours, with benefit.

What is needed is *judgment* in conserving the vital forces of the patient and in treating complications as they arise. Statistics of medication are valueless, unless the type of the disease be considered. Age, constitution, habits, previous history, climate and local surroundings, necessarily modify treatment and its result. The distance is antipodal between ambulating typhoid fever and the profound septic case, which paralyzes the whole system long before the disease can reach the midocean of its course. Judgment, I say, is required to generalize the disease, and to individualize the patient,

to measure accurately the conserving and destroying forces, from visit to visit, and to adjust the management of each case by the indications thus obtained. *Non nocere* should be our motto.

Do these views savor of nihilism in the therapeutics of typhoid fever? I reply that where there is no agreement whatever among physicians in the use of numerous remedies in a self-limited disease, it may well be asked whether they have an unquestioned value.

But, in conclusion, if I underrate mere medicinal agents, I cannot exaggerate the importance of hygienic and dietetic measures. In the truest sense we *cure* our patients by caring for them. They are often helpless, indeed, lapsing into the oblivion of infancy, and are wholly at our mercy. Are we not criminally negligent if we do not give them our most intelligent care? Until we have learned successfully to abort the disease, or have found an antitoxin for it, I repeat, that we must depend mainly upon hygienic and dietetic measures, with the free use of water externally and internally, and the guarded employment of those medicinal agents which have proven most trustworthy in the physician's individual experience.

I have been well satisfied with the results obtained in my practice from the application of these principles. And it is principles of treatment rather than specific medication, that I have aimed to suggest in a necessarily limited abstract. I should deem it presumptuous to do more than this.

Lastly, let me emphasize the great importance of the aid rendered by an intelligent trained nurse, in every serious case of typhoid fever which we are called to treat.

78 SOUTH FITZHUGH STREET.

XI. THE EXTERNAL AND INTERNAL USE OF WATER IN TYPHOID FEVER.

BY CHARLES G. STOCKTON, M. D.

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The question to which it is especially desired to call attention in this brief sketch is: What may we hope to gain by the external and internal uses of water in the relief of those morbid conditions which prevail in typhoid fever? It is not simply the question of reducing the temperature, for it cannot be too strongly insisted that while the

temperature is an extremely important and constant accompaniment of these states and changes, it is far from being the most serious or the most important of them. In fact it is to be regarded, both in its rise and reduction, as only an index of the more important and active conditions which are going on deep in the interior of the body. So constant and accurate an index is it, indeed, that we can hardly wonder at the error of Jurgensen and others in supposing it to be the chief morbid factor and source of danger, but it is proper to protest against any such position being accorded to mere hyperpyrexia, either as a source of danger or a point of attack. So far as the mere reduction of temperature is concerned, the Brand method offers probably little advantage over the antipyretic drugs, and its immense superiority lies largely in the effects it has upon the underlying factors.

Let us briefly review the conditions present in the typhotoxic state. First of all, we have a profound vascular paresis, particularly of the arterioles, capillaries and veins, and consequently a literal stagnation of the blood in these vascular swamps, both external and internal, and in the lymph spaces of the tissues. Next we have a disappearance from the circulating blood of numbers of both the red and white corpuscles, due apparently in part to their migration into the tissue spaces, and in part to the marked destruction, particularly of the red cells, resulting from the fever and accompanying toxemia. That this does actually occur is shown by the experiments of Jacquet, who finds that in typhoid fever both the red and white cells are markedly diminished in the blood-count. Next in probable importance is the great lessening and even crippling of the natural excretory mechanisms, particularly the kidneys, bowels and skin, which appear to be closely dependent upon this vascular stagnation. Following this we have an immense accumulation of toxic materials in the blood from at least three distinct sources, the natural waste products of the body which are of considerable amount, even in the resting condition and low diet of the typhoid-fever patient; next the toxins produced by the life-activities of the germs and their reactions upon the body cells; and last, but not least by any means, the autointoxication from the putrefactive changes which take place so profusely in the alimentary canal, of which the characteristic typhoid-stool is the only illustration necessary. Finally we have direct focal infection of localized masses of the tissues in kidneys, spleen, etc., aggravated by the heaping up, as it were, upon them of these toxic

products from the stagnation of the blood and lymph-current. It is especially desired to emphasize the disastrous effects of this stagnation of the toxin-laden fluid in the engorged lymph and tissue-spaces, for here is where the blood plasma is actually absorbed, and, so to speak, fed upon the tissues. The literal, actual food of the tissues is the part of the blood-mass which is most intensely poisoned.

Now as to the question, what effects can we hope to produce by the use of cold water upon these morbid conditions? First of all it is to be noted, that the effect is produced not so much by the mere exposure to cold water, *en masse*, as by the method in which it is brought into contact with the surface—not so much by an inherent property of cold or cold water, as such, but by the stimulus evoked by its sudden impact upon the nerve endings of the skin; and this effect will be largely dependent, first upon the temperature, and second upon the manner of its application. The effectiveness of the result will be found to depend more upon the *method in which* the cold water is applied than upon its temperature, its amount, or the length of its application. And even at the risk of tiresomeness, it is desired to emphasize this fact by a brief reference to the essential elements of the Brand method. That this should be necessary at this late date seems almost incredible, and yet so often do we hear the Brand method blamed for the results in certain cases, in which upon even a cursory investigation, we find that the line of treatment was, in its essential features, anything but that so ably advocated by Brand, that we feel justified in this course. In many of these cases the essential element in the method of the application of cold water, as laid down by Brand, was entirely neglected, and the fact of cold water being used is often the only element of similarity in the two processes. To call many of these "modified" methods by Brand's name is, as urged by Baruch, unfair and misleading. The essential elements of the Brand treatment I regard as three in number. First, that the patient is plunged into distinctly cool or cold water; second, that friction is actively maintained during his immersion so as to keep up the tone of the vessels of the skin; and third, that the immersion is continued until a general reduction of the temperature, and not a mere superficial one, is effected, as shown either by the thermometer or by the production of slight chattering of the patient's teeth, except, of course, in the event of symptoms of too great depression occurring before this point is reached. Then to repeat the bath every three hours as long as the

temperature rises above a certain point (102½° F.) The principles of its action appear, roughly speaking, to be, first, that we obtain a powerful stimulation of the entire vaso-motor mechanism, and particularly of the tone of the skin-capillaries, and through these that of the central nervous system, by the initial shock by the contact with cold water. Second, that this shock is prevented from becoming extreme, and the prolonged cold from producing spasmodic contraction of the skin-vessels by the amount of friction which is administered. Third, that the patient is kept submerged until, practically speaking, the entire blood of the body has had time to be pumped through the cool and active surface-vessels and the temperature of its entire bulk has been reduced. The first result upon the morbid symptoms is seen in the prompt relief of the stagnant congestion of capillary circulation in both skin and the great viscera. The piling up of corpuscles in the liver, which Jacquet has reported, is checked, and the blood is lowered in its specific gravity by permitting the contents of the lymph-spaces to drain back into the vessels. The last action probably also accounts for the marked improvement in another morbid condition, viz., the rapid increase of corpuscular elements in the blood, particularly of leucocytes, which the researches of Billings, Thayer, and Jacquet have proved to be such a striking result of the use of the cold bath. These observers attribute this result, not so much to an increased production of the cells, as to their return to the blood-channel from the lymph-spaces. The characteristic hypoleucocytosis, which is so well marked in typhoid fever as to be of no small value as a diagnostic sign, is strikingly diminished by the cold bath.

As to the effect upon the general toxemic conditions, no better illustration can be given than the changes in their unvarying index — the temperature — which are vastly greater by this method than by sponging or by any of the so-called "modified" forms of the hydriatic treatment. It is believed that its superiority in this respect is hardly adequately recognized. The recent statistics of Cabot in the Massachusetts General Hospital upon a total of some three thousand cases, give the average temperature-reduction by the sponge bath as four-tenths of a degree Fahrenheit; while the average reduction by the plunge or Brand method is two and four-tenths degrees, and not only greater, but much more persistent than the smaller effect of the sponge method. Hence, we feel justified in insisting that this method, if adopted at all, should be followed in its entirety, as re-

peated experiences have now accumulated to show that no other method is to be compared with it in the effectiveness and permanency of its results. One of the most important elements in its effect is that reported by Ausset, who found that not only was the flow of urine increased by the cold bath, but that its toxicity was more than doubled within a few hours. The value of this result alone, in relieving the poisoned stagnation throughout the entire system, can hardly be over-estimated. What the results of the method are, it is hardly necessary more than to enumerate before this audience. First, and most striking of all, but valuable chiefly only as an indication of deeper and more essential improvement, is the marked lowering of the temperature. Next, and almost equally striking, is the soothing and calmative effect upon the nervous system, the relief of delirium, and the production of refreshing sleep, a gain of incalculable importance in a long-fought siege like typhoid, the restoration of the moist and natural condition of the skin, signalizing the resumption of its normal excretory action, the slower, fuller and more elastic pulse, the improved appetite, and, in fact, the reduction of all characteristic features of the well-known typhoid state to a minimum, which comes at times almost to the disappearance point. I doubt, seriously, whether a typical photograph of the "typhoid state" could be taken at any time during the course of a majority of cases under the Brand treatment. And the treatment is as safe as it is effective.

In my experience there are only two conditions which can be regarded as contra-indicating the full method. These are marked renal complications or the occurrence of intestinal hemorrhage. By the presence of renal complications I by no means refer to mere traces of albumen and casts in the urine, for these I believe will be found to be present in nearly ninety per cent. of all cases of typhoid. It is only a question of searching carefully enough to discover them. Nothing short of an inflammatory involvement of the renal epithelium is sufficient to prevent the use of the Brand treatment. The objection to its use in hemorrhagic cases is that of increasing the blood pressure in the internal organs; and in both these cases we may hope to reach fairly satisfactory, although not as powerful, results by the skillful use of hot baths. In the renal disturbances this is accomplished by stimulating the surface circulation and increasing the excretory action of the skin and, to some extent, relieving internal congestion; while in hemorrhagic cases something of

the same effect may be produced, and any unnecessary disturbance of the patient avoided, by the use of the hot mustard foot baths. Contradictory as it may seem, an improvement in the tone of the superficial blood-vessels may be produced by the sudden application of either hot or cold water, and the paralysis of this tone by undue persistence in either.

To the problem, how these effects are produced, but the briefest reply will be attempted. Late authorities are agreed that the chief factor is not the mere mechanical reduction of the temperature, as such, but the marked improvement in tone, first, of the peripheral cutaneous and then of the general vascular system. This it is that drains and empties the engorged lymph-spaces of their poisoned food material, that relieves congestion in the hepatic and pulmonary circulation, that throws the full volume of blood through the anæmic, paralyzed kidneys. But just how this is brought about, and in what this improvement in tone consists, is still in doubt. The fact that the local constringent effect upon the vessels of the skin is promptly followed by a rapid reactionary dilatation is as familiar as the alphabet. But just why this reaction should so immensely improve the quality of the heart's action and relieve the toxic drowsiness of the whole nervous system is as yet hardly adequately explained. It is usually accounted for, simply upon the ground that it relieves the work of the heart by dilating the skin vessels and diminishing the peripheral resistance. But Winternitz observes, what a glance at the flushed skin of the fever patient would immediately suggest to the eye, that we have already a distended condition of the peripheral blood channels due to paralysis of the vessel-walls, and insists, in flat contradiction to the other explanation, that the heart's action is improved by the restoration of resistance in the peripheral circulation. It has been suggested, by Woods Hutchinson, that very probably the fundamental element in this so-called "improvement of the tone" in the superficial vessels, the appearance of which all investigators agree upon, is really an active and not a passive one, a local rather than a reflex change. In other words, that the normal condition of the muscles in the walls of the arterioles, as elsewhere, is not one of rest either in contraction or dilatation, but of constant rhythmic activity, and that the restoring of this active contractivity in the vast mesh of vessels in the skin, by the contact of the cold water and by friction, is the essential element in the improvement of the circulation, and my own observations have led me to practically the same

conclusions. The heart itself is, Hutchinson urges, nothing but a special local aggregation of these same muscular fibres, and like them, its action is intrinsic and merely regulated by the so-called cardiac nerves; and, when we recall that the great contractile mesh of the cutaneous vessels is capable of containing over sixty per cent. of the entire blood of the body, and that the whole of this surface is affected by the cold bath, it hardly seems impossible that the stimulation of this great, diffuse "skin-heart," may be a factor of the greatest importance in improving the entire circulation. Once this active addition to the total force of the circulation has been effected, the relieving of the lymphatic stagnation in all the tissues and organs follows rapidly. The nervous system, rid of the torturing poisons with which it has been saturated, most rapidly feels the relief. Sleep now becomes possible, and is simply the beginning of the benefits which will flow from this gain. The digestion is distinctly improved, by the relief of the portal stagnation, and another important line of connection with the relief column is opened up. The marked improvement in the nerve, determination and courage of the patient is but a striking symptom of the similar change which is taking place throughout the whole organization, and is of itself an immense gain in the struggle back to health. The kidneys are flushed by an abundance of blood, which both nourishes and stimulates them to increased excretory fforts. The glands of the skin, freed from the singular choking effects produced upon their excretory ducts by the lymph stagnation in the surface tissues, resume their activity, and, according to Quirolo, the toxic properties of the sweat of fever patients are almost as well marked as those of their urine, and so the entire situation is modified in the right direction. Nor is it simply a question of increasing the per cent. of the patients who escape with their lives. The proportion of those who emerge from the encounter, only half alive, is even more strikingly diminished. The serious complications and the permanent disabilities of the heart, of stomach, or of brain, which were so distressingly common after typhoid, treated by the old methods, are even more markedly reduced than is the death rate. And all this credit needs to be offset only by one item on the debtor side, and that is the quite frequent occurrence of a transient neuritis of the feet, the so-called "Brand sore toes." This result, which was first reported by Osler, and has also frequently been noted in the wards of the Buffalo General Hospital, is somewhat inexplicable, but in no case has it led to any permanent disability.

Of the internal use of water, it need only be said that it furnishes a valuable adjuvant to the external application. Its results may be briefly summarized as follows: It washes out the intestines, mechanically as it were, and thus diminishes the auto-intoxication. Passing into the portal circulation it flushes the vessels contained in this system, and also by its lower temperature possibly produces something of the same stimulating effect upon the intestinal and portal vascular systems that is produced by the bath upon that of the external surface. It immensely increases the flow of water through the kidneys, Baruch reporting, in some cases, an increase of three hundred per cent. in the amount of the urine passed within twenty-four hours after the adoption of the method. It also lowers the specific gravity of the blood primarily, and thus diminishes its toxicity, while, by a curious secondary effect, it increases the amount of corpuscular elements as recent experiments have shown. It is most commonly administered by the mouth in doses of from six to eight ounces every two hours; in fact, pushed to the extreme drinking-limits of the patient, so that from three to four, and in some cases five, quarts of water during the day may be administered. In severe cases, or in later stages, the subcutaneous injection of large amounts of the normal saline solution will be found very effective, and large "high" enemata of either hot or cold water, the so-called colonic lavements, will also be found of service.

436 FRANKLIN STREET.

XII. DISINFECTION OF TYPHOID EXCRETA.

BY W. GILMAN THOMPSON, M. D.,

New York.

I have been invited to discuss the importance and practical methods of disinfection of the excreta of typhoid fever patients. It seems elementary, however, to argue before this society the importance of this subject. No truth of bacteriology is now more firmly established than that of the causative relation of the bacillus typhosus to enteric fever. I will, therefore, merely emphasize the well-established facts that the typhoid bacilli can only leave the body of the patient in the alvine dejecta; that the stools become more and more infectious after evacuation; that the virulence of the enteric contagium may be preserved undiminished for months outside of the body; and that while its activity may be temporarily suspended by cold

drying or other conditions, it is promptly restored when the germs reach the favorable environment of the small intestine. The germs have been found to live for three months in unsterilized stools of typhoid fever patients (Ueffelmann), and they have been kept alive for two years on potatoes, on sterilized linen for over two months, on sterile garden soil for three weeks (Pfuhl), and Ueffelmann has kept them alive for five and a half months in common earth. They have been kept dry for two months without loss of vitality.

It has been stated that the bacilli only leave the body through the medium of the stools, but according to Dreschfeld (Albutt's System of Medicine) they are not infrequently found in the urine, and they have been obtained exceptionally from the sputum of typhoid patients. One bacteriologist claims to have found them in the urine of twenty-five per cent. of cases examined; another in six out of seven cases. In this country it has not been customary to regard the urine as a source of infection, but if these observations be confirmed, it should be disinfected in the same manner as the stools, pure corrosive sublimate or carbolic acid being added in sufficient strength to make the urine a 1 : 1,000 or 1 : 20 solution as the case may be.

In the destruction of the bacilli of enteric stools, the use of all proprietary germicides should be discouraged on the ground that their expense is apt to restrict their free employment, while they are less reliable than ordinary disinfectants.

Besides strong heat, of the many disinfectants available, there are but three, corrosive sublimate, carbolic acid and lime, which commend themselves to serious consideration, although one or two others will be briefly mentioned.

Corrosive sublimate is by far the most efficient disinfectant of typhoid stools which we possess, when it is properly applied, as a 1: 50,000 solution, promptly destroys the bacilli in culture media, but in disinfecting solid fecal masses it should be rendered acid, for the albumin present in the stools precipitates the mercurial as an albuminate before its germicidal action is complete. It is, therefore, desirable to add crude hydrochloric or sulphuric acid as in the following formula :

℞ Hydrargyri chloridi corrosivi, 1 oz.
Acidi hydrochlorici (commercial), ½ oz.
Aquae, 4 gals.

Unfortunately, both the corrosive sublimate and the acid are highly destructive to all metallic pipes and closet fixtures, and for this reason their use in hospitals where many cases are treated may seriously damage the plumbing. In a private house, with but a single case, this is less apt to occur if the precaution be observed of flushing well the pipes. Corrosive sublimate is a good germicide for use in military camps, for, owing to its disinfectant strength, it occupies comparatively small bulk in transportation. The fact that it is so highly poisonous need not make it less desirable than other disinfectants, for they are all poisonous if carelessly handled. The colorless, odorless solution has sometimes been mistaken for drinking water, but the addition of a little indigo or litmus will make this fatal error less liable to occur. When added to typhoid stools for disinfection, corrosive sublimate solutions should be in strength of not less than 1:500.

Carbolic acid is recommended for disinfection in the strength of ten per cent. The crude acid may be used as it is just as effective and one-third cheaper than the purified acid. The odor, while not agreeable in the sick-room, is not nauseating, and is not so bad as that of chloride of lime, and the substance does no harm to the plumbing, so that practically it has come into more general use for the purpose under discussion than any other disinfectant. It is the one in common use in the large New York hospitals, where several hundred cases of enteric fever are treated every year.

Chlorinated lime, which contains from 25 to 40 per cent. of available chlorine, is a very cheap and efficient disinfectant when used in large quantities. Its odor constitutes the chief objection to its use. If the patient does not object to the odor, a quarter of a pound may be placed in the bed-pan before each stool. Otherwise the stool may be received into a pint of a ten per cent. solution of carbolic acid, and then later an equal bulk of chlorinated lime is to be stirred into it. The latter, as compared with carbolic acid, is only superior in being less poisonous.

A four per cent. solution of chloride of lime contains from 1 to 1.5 per cent. of available chlorine. The Labarraque's solution of chlorinated soda, although somewhat stronger in chlorine (2 per cent.) possesses no superiority and is more expensive.

Milk of lime, or "white-wash"— lime in solution and suspension — is a good typhoid disinfectant, but being much slower in action than either chloride of lime or carbolic acid, it is less desirable for bed-

side disinfection than for use in privy vaults and latrines. One part of freshly burned calcic hydrate in eight of water will require about two hours for thorough germicidal action. Although it does little or no injury to plumbing its particular value is in disinfecting privies where typhoid stools are thrown, and each stool should be thoroughly covered with a large quantity of the disinfectant.

The use of *iron sulphate*, as recommended by Budd, is inexpensive, as it costs but about four cents a pound, but it is not a disinfectant of any strength, although it is a good deodorant. It should not, therefore, be relied upon where so important a germ as that of enteric fever is concerned.

Formol, or formalin, has lately been recommended as a suitable disinfectant and deodorant for enteric stools. It is used in a 1:20 solution and has the advantage of being non-corrosive.

The difference in cost of the disinfectants above recommended is insignificant, unless they are to be employed upon a very large scale in epidemics. The following prices are quoted from Squibb's Semi-annual Price List, No. 77, 1897. The prices are given per kilogram (2.7 lbs.): Chlorinated lime, 50 cts.; ferrous sulphate, 55 cts.; crude carbolic acid, 65 cts.; corrosive sublimate, $2.61. Thus, while corrosive sublimate is more than five times as expensive as chlorinated lime, it is used only in 1:500 and 1:1,000 solutions, which makes it really much cheaper than any of the other disinfectants. Again, crude carbolic acid is more expensive than chlorinated lime or iron sulphate, yet it is used only in 1:10 or 1:20 solutions, which makes it cheaper. The cost of impure hydrochloric acid, to use with corrosive sublimate, is also trifling. From these statements it follows that, if expense alone were to govern the choice of one of these disinfectants, it should decide in favor of corrosive sublimate.

According to Huppe, the typhoid bacilli, being anærobic on first leaving the body, are more easily killed at once than later. Murchison and Calsy claim that the bacilli require one or two days to become infective after leaving the body, but this is probably an excessive estimate, for bacteriologists disagree in regard to this point, so that, no matter what disinfectant is selected, it is safest to keep a solution of it always in the bed-pan ready to cover the stool the moment of its discharge. Any lumps of fecal matter should be immediately broken up with a stick which can be burned, or a glass rod which may be disinfected, so that by this means the disinfecting solution may permeate the entire stool, and the stool should always

be left soaking in the solution for fully two hours before being thrown away. If thrown into a sewer, or privy, or trench before the disinfectant has had time to act, the latter becomes weakened by dilution, or separated from the stool altogether.

DISPOSAL OF THE EXCRETA.

The final disposition of the excreta must depend upon such circumstances as the extent and character of the drainage system, and will vary in the country and city. Immediate burning of the stools, mixed with sawdust, is well enough in camps and villages if wood is cheap and abundant, but it is difficult and laborious to build a fresh bon-fire for each stool, and keeping the stools until several accumulate is undesirable. In large hospitals where furnaces are maintained the stools may be easily burned, but this necessitates carrying them about through the building, and every pail or other receptacle into which they are emptied, of course, requires additional disinfection. It is much simpler, and on the whole as well, to disinfect each stool separately and empty it down the ward water-closet or a specially constructed drain hopper, flushing it afterwards with abundant water. Care should be taken to prevent spattering in this manner, or in rinsing the bed-pan. Several years ago, two cases of enteric fever developed in my service at the New York Hospital among patients who had been confined to the ward much longer than the incubation period of the disease. Investigation showed that typhoid stools had been emptied down a drain in the ward lavatory, over which there was a water faucet. Contrary to rules, these patients had been drinking from this faucet, upon which particles of the dejecta might easily have spattered.

In seaboard cities where the drainage system empties directly into tide water, the problem of disinfection of the dejecta is less urgent than in the country. Upon inquiry at several of the New York hospitals, I find that the methods ordinarily employed are by no means theoretically perfect, the disinfection in many instances being quite superficial, but as the stools are promptly washed seaward through sewers into tide water, it makes but little difference to the community at large. However, every year in the late summer a few young men and boys of 12 or 14 years of age, are brought into the hospitals suffering from typhoid fever, who belong to too poor a class to have enabled them to visit outside the city. It is found that they

have been in bathing off the docks and close to the mouths of the sewers.

The question of possible typhoid infection from effluvia from ill-ventilated sewers or foul drains or cesspools into which non-disinfected stools have been emptied, has given rise to much discussion. In this country there has been of late years a rapidly growing tendency to decide the matter in the negative, and to regard cases of typhoid fever occurring in persons subjected to such noxious inhalations as coincidences merely, the germs having entered the system through some of the other manifold opportunities. In England, however, this theory still prevails to a considerable extent, and the statement appears in Stevenson and Murphy's Treatise on Hygiene and Public Health (vol. II, p. 320), that "there is no doubt that the air of sewers and drains which have become specifically contaminated, may, if allowed to find its way into dwellings through defective house connections, cause from time to time enteric fever among the inhabitants of such dwellings," and in support of this assertion, the writer of the article refers to recent English public health, "Reports on Outbreaks of Enteric Fever at Croydon, Worthing and York, by Drs. Buchanan, Thorne and Airy." The long latent period of typhoid fever under some conditions, and the difficulty of making thorough bacteriological examination of drinking water in connection with epidemics of this fever, may in part, at least, account for the prominence which the sewer effluvia theory of infection still assumes in the minds of some investigators, despite the weight of evidence against it.

In country localities the problem of disinfection is quite different. Here there is not only danger of water contamination from imperfectly disinfected enteric stools, but the soil itself in time may become infected. (Blyth.) There are many rural districts in this country in which a certain number of cases of typhoid fever occur with great regularity every year. Typhoid stools which have been incompletely disinfected, and which have not been deeply buried, but cast upon the frozen ground in winter, have been washed off in the spring into sources of water supply, and have caused extensive and disastrous epidemics.

Blyth says in his Manual of Public Health (p. 508): "A constant series of cases occurring regularly in the autumn among children would point to the probability of the soil itself being infected, for, as is well known, children sit about upon the ground, continually have earth-soiled hands, and in this way contaminate their food."

In the country in the absence of proper drainage or sewerage system and if cremation is not feasible, the stools should be disinfected thoroughly by chemicals and buried in a long trench at least four feet deep, and two feet wide. This trench should be remote from the well or other water source. The first stool should be emptied into it at one end, the others following in succession, each being promptly covered with a layer of quicklime and earth. Such a trench should never be allowed to become more than half full before it is closed, and the earth first thrown in, should be well beaten down.

A very common mistake in the process of disinfection in the country is the use of large quantities of water for cleansing bed-pans and other soiled articles. Although strict precautions are taken in other matters this water is sometimes permitted to flow away without disinfection, as, for example, when a pail is carried to the trench for the purpose of emptying a stool, and is thereupon flooded with several buckets of water which flow over the soil, scattering the germs about. It is better to use only the corrosive sublimate 1:500 solution, or the carbolic acid, 1:20 for such purposes, and not use more than necessary.

It sometimes happens that the disease is well advanced before the physician is summoned, and he finds that the patient has been making frequent use of a common privy. In this case the duty of the physician is not confined to disinfection of the subsequent stools, but the privy or cesspool already contaminated should be thoroughly disinfected with chloride of lime and cleaned out.

DISINFECTION OF ARTICLES COMING IN CONTACT WITH THE DEJECTA OR RECTUM.

There are several important details in connection with the disinfection of particles of the stools which may come into contact with various receptacles or with articles introduced into the rectum.

(1) *The bed-pan.*— This should be, when possible, of porcelain, rather than of japanned metal or agate ware, because it is not roughened and corroded by disinfectants, and being white, it is easier to see any soiled spots upon the surface, and it furnishes a better background for examination of the stools in a search for blood, mucus or undigested food. After emptying the stool, the pan should be thoroughly rinsed with boiling water and wiped off with either a carbolic acid 1:20 solution or a corrosive sublimate 1:500 solution, and then partially filled with the disinfectant ready for immediate use. Any cloth used for wiping the pan should be subsequently burned.

(2) *The thermometer.*— Each typhoid fever patient in an hospital ward should have his own rectal thermometer, which must be disinfected immediately after use by wiping it clean upon a piece of absorbent cotton, to be at once burned, and the instrument should be left immersed in a 1:500 corrosive sublimate solution. I have been unable to find satisfactory proof that enteric fever may be acquired by introduction of the bacilli in this manner into the rectum, but even in the absence of positive evidence, it may be possible, and it is such a simple matter to prevent the accident that no excuse could be found for its occurrence. In a crowded hospital ward the interchange of rectal and mouth thermometers will sometimes take place in spite of rigid rules, and every precaution should be taken to disinfect those used in diseases which are infectious through the dejecta.

(3) *Rectal syringes and tubes.*— The same rules should apply to the use of rectal syringes used for enemata, whether laxative or nutrient, and for the long soft rubber rectal tube used for the relief of tympanites. The latter should be scalded, and immersed for two hours in the 1:20 carbolic acid, or the 1:500 corrosive sublimate solution. As a rule, syringes with metallic tips should not be employed in the rectum in these cases, owing to the local irritation which they sooner or later are apt to cause, but if used, the tip should be subsequently disconnected from the rubber bulb, and boiled for an hour before being used upon any other patient. Anderson reports two cases of typhoid fever which became infected through the careless use of rectal syringes employed upon other enteric patients.

(4) *The hands of the nurses.*— The hands of the nurses or attendants should always be thoroughly disinfected after handling either the bed-pan or any other of the appliances above referred to, or the body of the patient himself. They should be washed with soap and hot water, scrubbed with a nail-brush and immersed in a 1:1000 corrosive sublimate solution. This is especially important just before going to meals, when the infected fingers or nails may convey the germs to bread or other articles of food about to be eaten. Nurses should also take the same precaution after giving sponge baths or tub baths, because it is almost impossible to prevent some contamination of the surface of the patient's body, especially about the buttocks, if many fluid passages have occurred. There will be some spattering of the discharges about, and particles containing the germs will get

into the bed or upon the body. (Since writing the above, I have noticed that Dr. Tyson, in his *Practice of Medicine*, p. 45, suggests that infection of nurses may occur through administering tubbing treatment.)

The visiting physician should be similarly careful to disinfect his hands after examining the abdomen of the patient. It seems an unnecessary degree of precaution to disinfect the hands after examining each typhoid patient in a ward, as some insist should be done, but such patients may be seen consecutively, and the hands should then be disinfected before passing on to a case of a different order. The nurses should also be warned against the habit of putting their infected fingers to their mouths. I make it a rule to frequently renew these cautions to the nurse in each case, for their importance cannot be overestimated. I speak feelingly on the subject, for I am confident that I acquired the disease myself several years ago from neglect of this kind. I had been for over two months at my own home, where I had drank no water or milk which had not been boiled. Being on duty at two hospitals, I had been daily examining a large number of enteric fever patients, and I could account for the infection in no other way than that in handling the abdomens or backs of some of these patients I had infected my hands, and had failed to cleanse them sufficiently before eating. I have seen a number of cases among trained nurses and orderlies which were unquestionably acquired in a similar manner.

(*5*) *Door-knobs* which the nurse has handled immediately after touching the bed-pan or other infected surface, should be scrubbed with a 1:20 carbolic acid solution.

(*6*) *Disinfection of the patient's sheets, blankets, pillow cases, towels and night-clothing*, as well as underclothing worn prior to remaining in bed, should be thorough. All these articles when soiled should be soaked in a 1:20 carbolic acid solution (corrosive sublimate is apt to stain), and then rinsed and boiled in a large clothes boiler for fully three hours. In hospitals where a compressed steam disinfection plant exists, the clothing should be disinfected for four hours at a temperature of at least 140° F. Fitz and Wood (Practice of Medicine, p. 120), declare that enteric fever is very common among laundresses who have washed the clothing of patients having this disease.

(*7*) *The mattress*, even though protected, as it always should be by a rubber sheet, is liable to become soiled by the evacuations from

the bowels. It should always be well aired and made over, and if actually soiled it should be disinfected by the Health Board plant, or the naphtha renovating process in cities, but in the country it may prove best to burn it. Rubber sheets should be wiped with 1:20 carbolic acid solution, rinsed in hot water, and aired in the sun.

(*8*) *Flies.*—While undergoing disinfection the tools should be kept covered, and care should be taken to prevent flies from gaining access to any particles of either the moist or dry dejecta. It is well known that these pests convey tubercle and cholera bacilli upon their feet and even in their own intestines, and it is quite possible for them to spread typhoid bacilli about in the same manner.

(*9*) Another practical point concerns the possible *infection of the patient* from his own dejecta. Furunculosis is a very common complication or sequel of typhoid fever. It occurs sometimes even in patients who have been daily receiving the Brand tub baths and whose skin has been kept carefully cleansed. The furuncles may occur in any part of the body, but in my experience they are far the most common about the buttocks and thighs, and I have been inclined to attribute them in such cases to the patient becoming inoculated with the ordinary streptococci through scratches or abrasions of the surface. I saw four or five such cases during the past autumn at the Presbyterian Hospital. It seems highly desirable that the patient's anus, perineum and buttocks should be wiped off with a 1:2,000 corrosive sublimate or a 1:40 carbolic acid solution after each defecation, and then washed with hot water and soap.

(*10*) A possibility of infection arises in connection with the treatment by cold tub baths. In a crowded hospital service it is customary to change the water in the tub only once a day, or, on the average after giving six baths. It may be necessary to bathe more than one patient in the same water. Patients very rarely defecate in the tub. I have known but one instance of it in tubbing upwards of 250 patients, and this patient was having almost constant diarrhoea. But even without this occurrence, there must be many typhoid and other germs floating in such water, derived from the parts about the anus, some of which may conceivably be rubbed into an abraded surface of the patient's skin, and there is also danger of infection of the attendants. They are apt to get out of breath while rubbing the patient in the tub, and to breathe through their mouths while bending over it, and infected water is thus quite easily spattered in. It is, of course, easy to exaggerate this danger, but it seems a possible

way of accounting for some few cases I have seen among nurses and orderlies while carrying out the Brand treatment, although owing to the labor of analyzing water for typhoid bacilli, I have been unable to obtain any positive data in support of this hypothesis. In the country the problem of disposing of a large bath-tub full of infected water must needs be quite serious. Corrosive sublimate cannot be added to a metal tub, and other disinfectants would have to be used in enormous quantities to be of value in purifying so much water. The water might be boiled in separate quantities, but that would require unnecessary time and labor. Probably the best way is to pour the water slowly into a trench filled with chloride of lime. In any event it should be kept away from all fresh-water sources.

The explanation of the cause of relapses in typhoid fever is still undetermined. There is a growing tendency to regard them as not always due to absorption of the typho-toxin, but to some other form of toxin, possibly a ptomaine, developed in the alimentary canal. If they are due to re-infection of the patient by the typhoid bacilli, is it not possible that such reinfection may be established by the reintroduction of fresh typhoid germs which have been developing outside the patient's body? The relapses often occur at a time when the patient is first beginning to make more use of his own hands in feeding himself with bread, etc., and as no pains is taken to disinfect them he may conceivably convey fecal germs to his mouth by means of his own fingers. I do not propose this theory with any confidence, but it is difficult to explain how the typhoid bacilli within the bowels, which have been there throughout the disease that has run its course, should suddenly give rise to one and even two relapses. Could it be possible that fresh bacilli, reintroduced at this time, may possess greater virulence?

The problem of how long typhoid stools should continue to be disinfected is of practical importance. It is customary and proper to begin the disinfection so soon as the diagnosis is made, but how long should it be continued? It is a needless expense and bother to keep up the process longer than necessary. I have seen one typical relapse occur as late as the twenty-first day after complete cessation of the fever of the primary attack, yet some patients are able to leave the hospital by that time. As a rule, the disinfection should not be relaxed for ten days after the temperature first remains normal, and if a relapse occurs it must be continued under the same rule. Stroganoff found the bacilli in the stools twice on the ninth

day, and once, quite exceptionally, on the fifteenth day after reaching the normal standard of temperature. On the other hand disinfection should be begun as soon as possible in each case, for although the bacilli are rarely discoverable much before the ninth day of the fever (Karlinski), it is better to err upon the safe side, and the date of actual onset of the disease is not always easily determined.

After death from enteric fever a plug of cotton, saturated with a 1:10 solution of carbolic acid should be inserted in the rectum, and the buttocks should be enwrapped in a three per cent. solution of the same to prevent any possible leakage of fecal matter.

CONCLUSIONS.

1. The best disinfectants of typhoid stools for practical use are (1) a 1:500 acidulated solution of corrosive sublimate, (2) a 1:10 crude carbolic acid solution, (3) chlorinated lime.

2. Owing to the possibility of injury to plumbing, the carbolic acid solution is preferable wherever plumbing is concerned. The lime is best for country use in privies and trenches.

3. The disinfectant should be thoroughly mixed with the stool and left in contact with it for fully two hours. Enough of the disinfectant must be added to completely cover the stool with the solution.

4. The bed-pan should be kept ready-filled at all times with at least a pint of the disinfectant into which the stool is at once discharged, and should be cleaned with scalding water and one of the disinfecting solutions.

5. Rectal thermometers, syringes, tubes and all utensils coming in contact with any of the fecal matter must be disinfected with the corrosive sublimate or carbolic acid solution.

6. After each stool the patient's perineum and adjacent parts should be washed and sponged with a 1:2000 corrosive sublimate solution.

7. Nurses and attendants should be cautioned to wash their own hands thoroughly and immerse them in a 1:1000 corrosive sublimate solution after handling the bed-pan, thermometer, syringe or patient, or giving sponge or tub baths.

8. All linen and bed-clothing used by the patient should be soaked in a 1:20 carbolic acid solution and subsequently boiled for fully two hours.

9. Disinfection of the stools should be begun as soon as the diagnosis of enteric fever is established, and should be continued for ten days after the temperature has remained at the normal.

10. In localities where a proper drainage system is lacking, the stools should either be mixed with sawdust and cremated, or buried in a trench four feet deep after being covered with chloride of lime.

34 EAST THIRTY-FIRST STREET.

XIII. DISCUSSION ON PAPERS ON THE POLLUTION OF WATER.

BY PROF. WILLIAM T. SEDGWICK,

Consulting Biologist of the State Board of Health, Massachusetts.

Owing to the lateness of the hour, I will say only that it gives me great pleasure to stand here as a representative of the State Board of Health of Massachusetts, and the more so because within the last few years that Board has made extended investigations regarding the ætiology of typhoid fever, especially in connection with drinking water, and has conducted a series of experimental investigations at Lawrence, Mass., upon the purification of water and sewage, which have become almost classical.

I wish to express, also, my great gratification to find that the State Medical Society of New York has given its attention to these matters, and my congratulations that there has been presented to-day so valuable a symposium of papers upon the subject under consideration. Within the last six years I have myself personally investigated fifteen outbreaks of typhoid fever, from an epidemiological point of view, and can heartily endorse all that has been said in regard to the difficulty of detecting the germ in water, milk, or wherever it may be. Nevertheless, I think that a good deal of progress has been made in our interpretation of phenomena, all of which has been so well stated in the papers that I shall not undertake to go over the ground. One or two points which have not been touched upon, however, I would like to mention.

In the first place, let me remark that there are some as yet little recognized sources of contamination of water. Some have not been mentioned in the papers. One of these is bathing in, or boating, or fishing upon, reservoirs or lakes from which water is drawn for drinking. A special investigation was made in Massa-

chusetts during the past summer concerning possible infections of water supplies by picnickers, bathers, etc. The results were instructive and interesting. There was also an epidemic of typhoid fever in the city of Haverhill, which has a population of about thirty thousand. At first we were unable to trace the source of the epidemic. The people were sure that the water supply was all right, that the milk supply was pure, etc. Finally we were forced to conclude that the disease was connected with one of the water supplies. We were assured that this could not possibly be contaminated, yet on going to the lake every evidence was found of the constant use of this reservoir as a picnic place. Defecation had taken place along the shores, even very near the gate-house, and there was good reason to believe that a low class of people who went there on picnics bathed in the lake. It was easy to imagine, and it was also probable, that pollution had taken place in that manner and caused the mild epidemic of typhoid which had distributed itself along this particular water supply.

Another peculiar case — I pass over the more ordinary ones because they are familiar to you all — illustrating how people may foul their own nests, so to speak, occurred at a lake to which an electric railway, or "trolley," carried several thousand people almost every day. Every day a different set of people attended, so that within a month, perhaps almost a hundred thousand persons might go to the lake and be exposed to whatever pollution of the water-supply was taking place. Privies were found on the grounds contaminating the lake from which the authorities drew the water supply by pipes carried out only about one hundred feet from shore.

I wish to express once more my personal gratification at having been present at this meeting. It seems to me that it is along the lines indicated to-day that progress must come. We know now that typhoid fever may be carried by impure water. We know, also, that impure water can be purified, and in this connection I would like to say that in the city of Lawrence, with a population of fifty-two thousand people, typhoid fever was formerly abundant. It was a common thing on going through a street to learn of a dozen cases, and the reason was that they drank water polluted with sewage which came down the river from Lowell and other points above Lawrence. To-day, with simple, natural, sand-filtration of the water all — the first of the kind in the United States, and giving readily the water needed — typhoid fever has nearly disappeared from the city.

Finally, I wish to express the sense of pleasure I have had in listening to the valuable critical paper of Dr. Carpenter. It seems to me that he has reviewed the matter thoroughly; has weighed it well; has presented the strong and the weak points of the case, and made his paper one which ought to be read by every person who has to do with the purification of the water supply of great cities.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY, BOSTON.

State Medicine.

EDITED BY HARRY SEYMOUR PEARSE, M. D.

An Additional Hospital for Criminal Insane. — A bill has been introduced in both branches of the legislature appropriating $125,000 for the erection of a hospital for insane convicts in connection with Clinton Prison at Dannemora. Last year $25,000 was appropriated for the same object and the foundations have already been laid.

The Matteawan State Hospital is at present very much overcrowded and contains nearly 600 patients. This hospital will be relieved of the care of insane convicts when the new buildings are completed.

The institution at Matteawan receives patients from the courts who are charged with crime, but who have been adjudged insane and who remain unconvicted. It also receives patients from all the penal institutions of the State whose insanity arises or becomes apparent after sentence and during confinement. The large majority of these latter cases are habitual criminals, and it is proposed to separate them from the court or unconvicted cases. Many of them are vicious and accustomed to criminal ways and to immoral practices. Their insanity does not hold a causative relation to their crime, but arises subsequent to its commission. The majority of them have chosen a life of evil-doing of their own free will. By heredity and by environment they constitute a dangerous class of professional criminals. On the other hand, the court cases, for whom it is proposed to reserve Matteawan, are not of the criminal type.

While, as a rule, they are a very dangerous class, on account of their delusions, nevertheless their criminal act is the product of their insanity, and they are not vicious or immoral in their habits. The crime for which they are confined is, perhaps, the single criminal act of their lives, and they have been led to its commission by reason of mental disease.

The great majority of them have committed crimes directed against human life, usually acts of homicide or dangerous assaults, to which they have been led by ideas of persecution, and which render them a constant menace to society when at large and to their custodians when in confinement. They are held to await the action of the courts pending their recovery.

The capacity of the Matteawan State Hospital when first erected was supposed to be sufficient for several years; but by reason of the operation of the State Care Act and other changes in the statutes, which directly and indirectly affected this hospital, its population has rapidly increased, with every prospect of continuance. It is now proposed to build in connection with Clinton Prison a modern hospital for the care of insane convicts while under sentence. The buildings are to be entirely detached from the prison, and of a sufficient capacity to accommodate 300 inmates, with provision for enlargement. The structures, as at present planned, comprise an administration building, a central structure containing a kitchen, bakery, large congregate dining-rooms, a chapel and a hospital, together with six adjoining wards. The buildings are to be of stone, fire-proof, and are to be erected by convict labor.

There are several reasons why Dannemora has been selected as the place for this institution. A less remote location would at first seem better. The class to be confined there are vicious, dangerous, crafty, difficult to manage and ever ready to escape. Many have homicidal tendencies, are perfect demons, and once having obtained access to a crowded community could perpetrate heinous crimes before capture, whereas at Dannemora the surrounding country is thinly settled, the place remote and the danger minimized. There, also, fewer sensational and harmful stories would find their way into the papers.

New York is in advance of her sister states in having such a hospital as Matteawan. Recently Pennsylvania and Connecticut have sent commissions to that institution to learn its workings and to submit reports and recommendations. Both states have felt the great need of a hospital of its kind, and each will, doubtless, soon have one. And we hope that Matteawan may be used as an example.

This new hospital at Dannemora will constitute a valuable addition to the already admirable system of care and isolation of our criminal insane.

The bill has passed the assembly, but with a reduction of $50,000, making the appropriation now $75,000, an amount wholly inadequate

for the completion of the plans. We regret the "pruning," yet must be satisfied for the present with the amount given if the figures remain unchanged till the bill passes the executive.

The Craig Colony Appropriation. — There has recently been introduced in the assembly a bill entitled, "An act making an appropriation for the Craig Colony for Epileptics." It provides for the setting aside of a sum amounting to $182,300 for the purpose of erecting buildings upon and grading the land now occupied by the colony, in other words, to establish proper facilities for the perpetuation of a work already begun.

The colony was founded in 1894 at Sonyea, N. Y., and since that time the patients have occupied the old buildings of the Shakers, from whom the land was purchased by the state. These buildings are wholly inadequate and improper in construction for the purposes of the colony, which is in every sense a hospital.

The colony system for the care and treatment of these unfortunates was inaugurated in France forty-six years ago, and in Germany twenty years later. The success of the method is unquestioned. Formerly the ultimate end of an epileptic was almost always dementia, whether he be confined to an institution and treated with cases representing all types of insanity or allowed his freedom. The records of these colonies show complete recovery in 6 per cent. of all cases and improvement in 60 per cent. The system has accrued to the moral, mental and physical betterment of an unhappy class as no other system or method of treatment. Insane epileptics are not included in the class treated; thus the patients are not forced to look upon epileptic dements with a realizing and horrifying sense of their possible future condition as they are in state hospitals.

The patients of Craig colony are not wholly dependent upon the State. There are some private and semi-private cases. And the product of their work for the fiscal year ending September 30, 1896, netted a sum equal to 50 per cent. of the sum necessary for their maintenance.

A large-hearted governor and legislature took the initial step in this reform by purchasing the land and establishing the colony, and it seems to me to be the duty of their successors to maintain it. The present appropriation is necessary to do it in the proper manner and according to the idea of its founders. Within the past ten years the state has made gigantic strides in alleviating the sufferings of its insane element. It has done away with the horror of the alms-house

as an asylum, and changed its big institutions from prisons for the confinement of the insane into hospitals for their treatment. The establishment and sustenance of this colony is but a phase of the great and grand reform, and should, therefore, be passed by both branches of the legislature and approved by the governor.

A Bill Providing for an Investigation of and a Report upon the Sources of Water Supply in this State. — Senator Brush, on February 2d, introduced a bill of great importance under the following title, "An act constituting the State Board of Health and the State Engineer and Surveyor a water board to investigate and report upon the sources of water supply in this state, and as to what means may be necessary to secure water in a pure state for use in the principle cities and towns, and for use in the canals in the state, also to provide for the necessary surveys and making an appropriation therefor."

This bill is directed mainly toward a complete survey of the water sheds of the Adirondacks with the view of furnishing a wholesome and abundant water supply to the cities in the Mohawk and Hudson valleys and southern portion of the state if possible. The survey would be but the first move in a gigantic enterprise, should it prove the possibility of obtaining water in necessary quantities and of desired quality from this source. And, as stated by a member of the New York State Board of Health, it would be worth $40,000 — the amount appropriated for the purpose — to the state, to know whether water could be obtained from such a desirable source.

It is an indisputable fact that the impure waters of the Mohawk and Hudson rivers add greatly to the mortality rate in this state each year. The state mortality report for 1896 shows that 1,600 deaths were due to typhoid fever, "the highest number being in the southern tier and Hudson valley."

The citizens of the city of Albany are now discussing a plan for the construction of a sand filtration plant, recognizing the necessity of purifying in some manner their water supply, which is taken from the Hudson river, and it would not seem advisable for them to discontinue their efforts, awaiting any action of the state towards a general supply in the remote future from the Adirondack lakes and streams.

We hope that Senator Brush, who is a physician and appreciates the necessity of some radical move in this direction, may be successful in his efforts to get this measure through.

The Appointment of a State Veterinarian. — Under the title "An act in relation to the appointment of a state veterinarian, and defining his duties," a bill was presented in the Senate, January 22, and provides as follows :

1. That the governor, with the advice and consent of the senate, shall make the appointment ; the term of office three years, and the appointee shall be a regularly graduated veterinary surgeon, having practiced not less than ten consecutive years in the state ; that he shall be a member of the State Board of Health, and that his compensation shall be three hundred dollars per month and expenses.

2. That he shall investigate any and all cases of contagious or infectious diseases in the lower animals, in any part of the state, reported to the State Board of Health or commissioner of agriculture, and direct the management thereof and enforce the laws relating to these diseases.

3. That all cases of tuberculosis in animals shall be put in his charge, and it shall be his duty to investigate them, assume responsibility of and report upon them.

It is certainly true that the state is very much in need of the enactment of some measure which will give it complete control of all infected animals within its borders. As it is at present, whenever a case of the infection of human beings through animals presents itself, the city or county health authorities must manage it, and this always leads to delay and endless litigation, as in the recent case of investigation into the scarlet fever epidemic in Albany and the praiseworthy endeavor, at the same time, of the local board to establish an organized crusade against tubercular infection through milk. Strong opposition was immediately encountered.

This bill is an admirable measure as far as it goes, but it does not go far enough. One man could not, under the conditions existing at present, take care of this department. Our state holds no restriction whatever against the constant inflow of tubercular cattle to its territory. States surrounding us guard every gate where cattle enter their precincts with an inspector who tests each head for tuberculosis. And we are told that many heads of cattle that are judged tubercular by them are thrown back into our State. Under such conditions it would be manifestly impossible for one man to fight this one disease alone with any degree of success. The state should have all cattle entering its borders examined for tuberculosis at the points of entrance.

Here is but another cry for the necessity of a fountain head of State hygiene with an official bacteriologist and chemist, a well equipped laboratory and expert inspectors, both medical and veterinary. Berlin has such an institute, and there is no reason why New York state should not have one. It should be under the control of the State Board of Health, then that department of the state government would have the available means for carrying on its most important work, which at present it certainly has not.

The Optometry Bill. — No measure relating to state medicine, so far presented in this session of the legislature, has brought forth anywhere near the opposition that this so-called optometry bill has met with. From the moment of its introduction there has been a constant and vigorous fight against it. And it is safe to say that every medical society and association in the state, every journal which pretends to guard the welfare of the medical profession and the people, every oculist of good standing and every reputable optician, is strongly opposed to it.

So far the bill has been given two hearings before the assembly committee on General Laws. At each hearing vigorous pleas in opposition were heard, by Drs. Wynkoop and Marlow of Onondaga county, both representing medical societies, at the first hearing, and at the second, by E. B. Meyrowitz of New York city, and A. White of Buffalo, prominent opticians; Dr. A. Walter Suiter, representing the State Medical Society ; Drs. Callen of Westchester and Marlow of Syracuse, Drs. Van Fleet and Mittendorf of New York city; Drs. Ward, McDonald, Bendell and Cox of Albany.

Their objections to the bill were chiefly as follows: That none but practicing physicians were competent to advise and prescribe for diseased eyes; that there was great danger to the public from irresponsible persons attempting to adjust glasses; that it would license to practice upon an ignorant public a large class of designing and unskilled men who know nothing, and are not required to know anything, about the diseases of the eye, or the underlying pathological conditions of the body which are often the direct cause of derangements of vision.

We are at a loss to understand how the committee or legislature can conscientiously favor such a measure, and should the committee report it favorably, the legislature should promptly vote it down in the interests of humanity.

The New York State Civil Service Commission will hold open competitive examinations for medical positions in the State service April 10, 1897, notice of which is printed on another page.

Obituary.

ALBERT WELLS KILBOURNE, M. D.

Dr. Albert Wells Kilbourne was born in Liberty, Sullivan county, N. Y., July, 1850. He was educated at the Peekskill Academy and received his medical degree at the University Medical College, N. Y., 1874. He was house-physician at St. Peter's Hospital, Albany. Among the positions held by him were assistant to Eye and Ear Dispensary, Albany Hospital. He was also on the surgical staff of the general dispensary. For several terms he filled the district physician's appointment, and for four years was a U. S. pension examiner.

He died January 14, 1897. Dr. Kilbourne was a faithful, painstaking, skillful practitioner, and is missed by many to whom he was both friend and helper. L. B. W.

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Original Communications.

For the ANNALS.

THE REMOVAL OF EMBEDDED POWDER-GRAINS.

BY EDWARD JACKSON, A. M., M. D.,

Professor of Diseases of the Eye in the Philadelphia Polyclinic; Surgeon to Will's Eye Hospital.

Embedded powder-grains are of importance chiefly when they are situated in the face. When powder is blown into the face some of the grains are apt to strike the eyeball and lids, so that most of these cases come to the notice of ophthalmic surgeons. If the eye escapes destruction, the patient is usually allowed to go with such disfigurement as may be caused, and congratulated that the result is no worse.

The history of attempts at extracting powder-grains with ordinary spuds, or knives, or specially devised instruments, shows that a large amount of time and effort may be expended in this way without preventing ultimate disfigurement. On the other hand, some cases that seem greatly disfigured at the time of injury soon show immense spontaneous improvement. The result depends upon whether the grains are superficially or deeply embedded. In the former case they will be thrown off with the epithelium and leave no disfigurement; while in the latter there will remain permanently in the tissue some portion of the powder, which will become gradually diffused and cause a permanent and very disagreeable disfigurement.

A great deal of useless, or worse than useless, effort and time have been spent on "powder-grains" on the supposition that they were actually "grains" embedded in the tissue, and as such could be picked out. It should be remembered that a powder "grain" is a mechanical mixture of very finely pulverized charcoal, salt-

petre and sulphur. As soon as it becomes embedded, and subject to the influence of the tissue fluids, the saltpetre—potassium nitrate—dissolves away, the sulphur also shortly disappears, and there is left only the finely divided charcoal diffused through the tissue.

At first this remainder is massed in a small area of tissue, where it gives the appearance of a black grain, capable of removal as a single mass. But even at this time it has become so incorporated with the tissue that its removal is impossible without the removal of certain portions of the tissue itself; and, as time goes on, the extent of tissue thus involved increases with the diffusion of the black particles. A recognition of this fact would often save the patient from unnecessary pain, the surgeon from waste of time, and both from ultimate disappointment. The problem of the removal of powder-grains when deeply embedded, is simply the problem of removing the tissue in which they are diffused with the smallest destruction of tissue not yet implicated.

In most cases a large part of the original disfigurement is due to the powder lodged on or in the epithelial layer, and this will be thrown off in a few days in any case. To favor its separation, an old remedy, and one of the best, is poulticing; another is blistering, another, the use of a strong spray directed upon the part. A still more recent proposition is that of Dr. Weiss (*Transactions of the Colorado State Medical Society*, 1895, page 530), who injected hydrogen dioxide with a fine-pointed hypodermic needle directly into the powder deposit. These methods may all be resorted to in a recent case with much superficial deposit of powder. But, when the deposit masses were deeply embedded, they have, in my hands, all proven ineffective.

For the removal of such deeply embedded grains I resorted, more than four years ago, to the use of the galvano-cautery. (*Transactions of the Philadelphia County Medical Society*, 1892, page 384, and *Ophthalmic Review*, 1895, page 104.) This does effect the object. It does not explode or burn out the powder "grain" as a powder "grain;" for, as such, it does not exist, even when the patient first comes under treatment. But it destroys the limited area of tissue in which the minute particles of carbon are diffused, and the resulting slough carries them off.

Each particular point of deep disfigurement must be touched. Hence it is a remedy not applicable to old cases, where the stain has become diffused through the whole skin of the part. The earlier it is applied, the less the amount of tissue it is necessary to destroy. But in practice one must first, by some of the other methods, get rid of superficial grains which do not require burning.

The repeated applications of the cautery required in some cases (I have made three hundred at a single sitting) are too much for even the strongest nerves, and a general anesthetic must be resorted to. On account of its inflammability the use of ether is out of the question. Ethyl-bromide I have found rather unsatisfactory, because the patient, coming out from under the influence of the drug very quickly, unless very closely watched, will frequently begin to wince and move so as to interfere with the exact application of the cautery point. Chloroform, therefore, is preferable as a general anesthetic in these cases. Where the number of grains to be destroyed is not very large, and particularly if they are massed in a small space, local anesthesia, by the infiltration method of Schleich, I have found satisfactory.

The only special instrument required for the operation is a cautery battery, with a small cautery tip. The tip should be kept at a white heat, thrust quickly into the tissues to the necessary depth and extent, and quickly withdrawn from them far enough to avoid any unintentional burning of the skin. Several "grains" are thus to be destroyed in rapid succession; and then the current may be turned off and another group of "grains" studied as to how deeply and in what order they should be burned. It is well to make the first burning pretty thorough. But in bad cases it is impossible to always judge correctly as to the depth of the tissue involved, and a repetition, after a few days, may be necessary.

Considerable patience is required to effect the complete removal of the smallest grains: but this is essential for a perfect result, and probably there is no one retaining the traces of powder-grains in his face who does not wish that such removal might have been effected at any cost of time and effort. For grains embedded in the cornea, the operation is precisely that of cauter-

izing the cornea as for suppurating ulcer. Any grains passing more deeply into the eye are beyond the reach of this method.

Little after-treatment is required. The conjunctiva may be frequently bathed with boric-acid solution. The sloughs of the skin separate, in a very few days, without much reaction and without any treatment whatever.

1633 LOCUST STREET, PHILADELPHIA.

For the ANNALS.

THE PROGNOSIS OF CHOKED DISC.

BY DR. ÉPERON,

Lausanne, Switzerland.

(Translated by C. M. CULVER, M. D., Albany, N. Y.)

Since the first communication on this topic was made by von Graefe, in 1859, choked disc has occupied a very prominent place among symptoms of cerebral tumor. Eminent neurologists, as Wernicke and Hughlings Jackson, ascribe to it considerable importance, from this point of view, in spite of the facts that, on the one hand, this symptom is lacking in at least twenty per cent. of cases of cerebral tumor, and that, on the other hand, several cases have been reported in which choked disc was a symptom, but where the autopsy revealed no cerebral tumor.

It suffices to say that the prognosis of choked disc is among the most unfavorable, especially as regards the life of the patient. Cerebral tumors that are curable by medical or surgical intervention constitute, indeed, even yet, the exception. With reference to the visual functions the prognosis is no more favorable; the papillary stasis, when it is of long duration, generally leads to grave lesions in the optic nerve; and blindness, more or less nearly complete, is often added to the other suffering caused by a cerebral tumor up to the very termination.

I have said, advisedly, when the papillary stasis is of prolonged duration. It is, indeed, remarkable, and herein is found one of the characteristic signs of genuine choked disc, that the visual functions may remain for months absolutely normal, or only very slightly diminished, with considerable ophthalmoscopic changes, such as an enormous swelling of the papilla, shrinking in the size of the retinal arteries, dilatation and serpentine aspect of

the veins, radiating, whitish striation of the retina all about the papilla, and even farther in the ocular fundus, hemorrhagic flashes or spots of yellowish white degeneration about the papilla, and even about the macula, simulating albuminuric neuro-retinitis. It is this absolute or relative integrity of the visual functions which, in conjunction with the prominence of the œdematous papillary tissue, distinguishes real choked disc from ordinary optic neuritis. The latter affection may also be met, though more rarely, in cases of cerebral tumor, but it is especially symptomatic of inflammatory, intracranial lesions; then it is often observed in the idiopathic condition, under the influence of various local or general causes.

The purpose of this article is to call attention to the curability of choked disc in certain conditions, and that apart from the fortunate results which have been produced, at times, by surgical intervention. Examination of the somewhat copious literature of the subject, in conjunction with some observations which I have had the opportunity to make, has induced me to submit the article to my colleagues. It tends to present the prognosis of choked disc in a somewhat less gloomy light than has been true, I believe, heretofore.

It is necessary to divide cases of choked disc, that are curable, into different categories.

1. *Choked disc, with ill-defined cerebral symptoms.*—I will cite, as an example of this class, the case of paralyzing vertigo that I saw in 1888, and published in 1889, in the *Revue Médicale de la Suisse romande.* The patient in question presented, besides very characteristic signs of Gerlier's disease, double choked disc, which, from its appearance, must have already been of long duration and have reached the regressive stage. Indeed there existed patches of degeneration of the optic fibres all around the papilla and the swelling of the latter was no longer very marked. In the intervals of his attacks, this patient enjoyed good health. His visual functions were absolutely normal. My colleague, Dr. Oguey, of Berchier, from whom I have sought a report concerning this patient, kindly informs me, on the 16th of January, 1897, that the patient is perfectly well and no longer complains either of visual disturbance or of other ailments.

2. *Choked disc symptomatic of syphilitic brain tumors.*—Syphilitic neoplasms in general being often happily affected by specific treatment, it is not surprising that cerebral tumors, of luetic origin, may disappear as a result of mercurial or mixed treatment, and, with them, the papillary stasis that they have produced. Cases of cure, of this sort, are not, indeed, rare. I have not had opportunity to see any of them, myself, but I find reports of twelve such cases in the pertinent literature. These observations, for which we are indebted to Förster (of Breslau), Wernicke, Harmsen, Busch, Levinsohn and Perls (of Professor Hirschberg's clinic), possess in common the following principal traits: syphilitic antecedents, double choked disc with cerebral symptoms, diffuse or focal (aphasia, hemiparesis, various ophthalmoplegias, paresis of other cranial nerves), with complete cure by anti-syphilitic treatment.

Förster, whom I have just cited, claimed, in his classic monograph on the relations of ocular affections to general diseases, that only the papillary stasis of syphilitic origin could be cured. This assertion is evidently false and, to prove that it is, I have the following category:

3. *Choked disc, with cerebral symptoms, whose origin is very probably tuberculous, in non-syphilitic subjects. Recovery without specific treatment.*—Professor Pflüger, of Berne, has already published (in 1878) a case of double choked disc, with paralysis of the right external oculomotor, in a subject affected with tuberculous meningitis, the case terminating in recovery. I am able to add two new observations to this. The following is the first, which, for the greater part, I owe to the kindness of Dr. Dentan, who made the observation with great care:

CASE I. Alois B., 25 years, was referred to me the 26th of December, 1893, by our esteemed colleague, with the purpose of submitting him to an ophthalmologic examination. His father is robust; his mother has a lupus of the nose; a sister died of tuberculous, cervical spondylitis. No alcoholism or syphilis. This young man, of rather frail and anæmic aspect, for a rustic, presents, for the last three months, among transient, cerebral disorders (momentary "absences," difficulty of speech, headaches, vomiting, sensory and motor paresis of both hands),

abnormal visual symptoms; slight diminution of vision and, above all, diplopia. I find visual acuteness amounting to five-tenths, in the left eye, while that of the right is normal. Pupils react well; the field of vision, as well as chromatic perception, is normal. *Per contra*, there exists paresis of the bilateral accommodation, and paresis of the left inferior oblique, determining diplopia. I conclude that cerebral tuberculosis is probable, make a very grave prognosis and advise the application of leeches to the temples. Dr. Dentan prescribes, besides, a decoction of cinchona.

The fourth of January, 1894, or nine days after I first saw the patient, diplopia had disappeared. Opthalmoscopic aspect stationery. Thirty centigrams of creosote a day, in pills; small blisters on the temples and behind the ears.

The 11th of January, Dr. Dentan notes: sensory and motor paresis of the left hand, up to the elbow; insensibility of the lips, on the right side, for an hour or two; numbness of the whole left leg, during only five minutes. These passing symptoms reappeared, now and then, then disappearing totally up to the middle of February. As to the eyes, acuteness of vision has become normal again; papillary stasis has diminished; the veins are still tortuous, the edges of the papilla still imperceptible, but the central excavation commences to be defined. Diplopia has not reappeared.

The 19th of February, a prolonged epileptiform attack in the night. The next morning B. feels well, with the exception of a slight headache. No paresis. Dr. Dentan orders temporary cessation of the use of creosote and prescribes bromide and bicarbonate of soda; rest, diet and cold compresses on the forehead.

Examination of eyes, March 20th; stationary condition; slight diminution of color perception, for red and green.

The 20th of March, after having felt absolutely well for several weeks, epileptiform seizure in the night, with convulsions of the limbs, the face and eyes, according to the account given by the parents. After this attack, Dr. Dentan finds a state of hebetude, with pupils dilated, reacting. Biting of the tongue, blood in the mouth. Cephalalgia, gastralgia.

In the early part of April, while milking, general malaise, with attack of convulsions in the right arm and slight aphasia, all of short duration. Another examination of the eyes, the 18th of April; acuity of vision, both eyes, normal; no diplopia; with the ophthalmoscope, papilla still somewhat diffuse, but its edges discernible. Vessels normal. Central excavation reëstablished.

April 29. Epileptiform attack. Convulsions appear to have been general, more especially pronounced, however, in the right arm and right half of the face. No change in the condition of the eyes. Use of bromide resumed, three grams a day.

During May almost entirely well, except a few attacks of depression and agitation; slight aphasia at times.

June 12th, tingling, at first on the right side, in the arm; then in the left hand and arm, the neck, upper lip and left half of the back. Sensibility appeared slightly diminished in the parts where the tingling was felt. Chronic convulsions in the left arm, for three minutes; tingling also over the abdomen. Leeches at the temples, St. Germain tea, continuance of the bromide.

June 15th, painful tingling in the left half of the trunk; in the morning, transitory spasm in the left arm; sensation as of strangling and constriction at the neck. Pulse and vision normal; no cephalalgia.

From this time on the cure seemed to be complete.

The last examination of the eyes was made the 8th of March, 1895, when the visual functions were normal. Ophthalmoscopically, the vestiges of papillary stasis still showed themselves as a slight yellowish halo around the papilla, which is not atrophied; vessels normal. Dr. Dentan, who often sees him, finds that the patient's health remains perfect, at least apparently; he has lately been married.

CASE II. Sophie M., eleven years old, treated at the dispensary; this child, of delicate constitution, has lost her father, who died of phthisis; her mother is well. She suffers herself from vomiting, epiletiform seizures, with loss of consciousness, general convulsions, almost continual headache, inaptitude for intellectual work or any prolonged fixation of gaze. No focal symptom.

The first time I saw this little girl, in October, 1896, she presented, in each eye, very pronounced papillary stasis, with normal visual acuity and field. Three weeks later, under the influence of complete rest and some other hygienic prescriptions, the papillary stasis had almost entirely disappeared. As in the preceding case, however, traces of it are still visible, in the form of a peripapillary halo, which partially masks the outline of the nerve disc. The latter, without being atrophic, has a uniform, yellowish-gray, dirty tint.

Dr. de Rham, who also treated this child, has kindly given me some information as to her general condition. She suffered, last summer, from very abundant uric acid gravel, for several weeks. This disappeared, after a stay in the country, during vacation. The apex of one lung is affected with a slight catarrh, probably tuberculous.

I ought to add, to these statements, that the uric gravel reappeared, not long. The urine contains abundant sediment of urates and uric acid. No albumin; no blood corpuscles or pus cells. The epileptiform seizures have not recurred since the recovery from choked disc. On the other hand, cephalalgia and complete inaptitude for work persist and the child has quotidian night sweats, with greatly troubled sleep.

Since there has been no anatomical examination, the tuberculous nature of the cerebral lesion which produced papillary stasis in the two cases, just cited, has not been proved. At the same time it is evident that the symptoms presented by the patients, their hereditary antecedents and their recovery without having had anti-syphilitic treatment, are so many presumptions in favor of the diagnosis of meningeal or cerebral tuberculosis, with exceptionally favorable issue. Cases of this kind, ending in entire recovery, at least provisory, although exceptional, are not extremely rare, and I think that every physician who has practiced fifteen or twenty years has had opportunity to observe at least one of them, and perhaps several, among his patients. I wished to bring up the fact with the special point of view of the curability of choked disc.

4. Papillary stasis is still susceptible of spontaneous cure when it results from *intracranial, hemorrhagic effusion, of traumatic origin.* Professor Panas, of Paris, reported, in 1876, the follow-

ing case: A railway employee fell from the roof of a car; profuse bleeding from the right auditory canal; comatose condition and fever for five days. The fifth day Professor Panas found very marked papillary stasis; vision, shortly afterward examined, was normal. Complete cure, at the end of one month, of all the symptoms, except the choked disc. Visual acuteness, however, remained intact. It was only after about ten months that the ophthalmoscopic aspect resumed its normality.

I had occasion to observe an absolutely analogous case, ten years ago, in the service of Doctor Rogivue, at the cantonal Hospital. Unfortunately the patient's record could not be found, afterward, and the notes of the case, that I took, are somewhat laconic. They will suffice, however, to give a fair idea of it.

CASE III. C.——, Francois, 46 years old, somewhat alcoholic, entered the hospital the 30th of March, 1886. Some time before, he had had a fall, on the occiput, the effect of which did not, at first, appear serious. Thereafter, however, C. suffered from headache persistent vertigo and a slight, left hemiparesis. One day I was visiting a patient at the hospital, when Dr. Rogivue asked me to examine C. I found, at first, normal visual functions and, opthalmoscopically, double choked disc (the protrusion of the papilla amounting to at least one millimetre). Without wishing to diagnosticate, at the outset, a cerebral tumor, I inclined toward that hypothesis; but, when I saw the patient again, a few days before his dismissal, the 15th of April, the ophthalmoscopic appearance had been favorably modified; the papillæ were less swollen and their outlines were again discernible. The other cerebral symptoms had disappeared. Doctor Waeber, of Bière, from whom I recently sought news of this patient, kindly informs me that he is well and has normal vision.

I shall have a few words to say, farther on, concerning the pathogenic mechanism of this kind of choked disc. I ought to point out, again, briefly, the special evolution o fchoked disc, in certain cases of brain tumor, of specially slow progress. The strange case reported by Mathewson to the Fifth International Opthalmological Congress, must be assigned to this fifth category. It concerns a man, 32 years old, having choked disc, vision somewhat diminished (50 per cent), and some slight cerebral symptoms. This person remained under observation

three years and a half without any change in his condition taking place. He was killed in the fire which burned the Brooklyn Theatre. As it was difficult to establish his identiy, after the catastrophe, an autopsy was made and he was recognized by means of the cerebral tumor present; it was a cyst of the base of the brain.

Professor Leber reports, likewise, in his monograph on optic-nerve affections, an interesting example of this kind. The patient, who had been under observation for three years, presented, at the outset, double papillary stasis, with slight diminution of vision, violent attacks of cephalalgia, intense roaring in the ears, paresis of the right internal rectus and partial anæsthesia of the left half of the face. All these symptoms disappeared, except the roaring, after the administration of the iodide of potassium, although no ground existed for suspicion of a syphilitic affection. Another analogous case, cited by Leber, seems to me entitled to figure here, inasmuch as it is a question, in this case, rather of a genuine optic neuritis, consecutive upon partial meningitis, followed, moreover, by recovery. I will report, on the other hand, the case of one of my patients, affected, five years ago, with double choked disc, with cerebral symptoms and in whose case the latter persisted after the papillary stasis had disappeared.

CASE IV. Mme. B., fifty years old, consulted me the 23rd of March, 1892, for diplopia, which had annoyed her about two months. I found in each eye normal acuteness of vision, with hyperopia of one dioptry; pupils normal, visual field and chromatic perception the same. Paresis of the external motores-oculorum *of both sides*, almost equal, left and right, with corresponding, homonymous diplopia. Pains in the right half of the head, especially in the frontal region. Ophthalmoscopically, double choked disc, with little, retinal, peripapillary hemorrahges. No other symptoms. I thought of a cerebellar tumor pressing on the centers of origin of the external motores-oculorum, and made an unfavorable prognosis.

Despite this prognosis, the patient is still living and I examined her again the 8th of last December, or about five years after the beginning of her trouble. She still presents, it is true, very

troublesome cerebral, and especially cerebellar, symptoms. This lady, of perfect sobriety, is almost constantly in a state of vertigo like that of alcoholic intoxication, carried to nausea. She feels and very well describes the further symptom of drunkenness, that, when she feels the dizziness coming on, a voluntary effort of fixation, with the eyes, tends to lessen it and make it disappear. On the contrary, the vertigo increases when the eyes are closed. Diplopia shows itself yet, from time to time. There is evidently a lesion of the center of coördination of the movements of the eyes, which is supposed to be found in the cerebellum, and that organ must be the seat of a tumor of very slow progress. The sense of smell has completely vanished; hearing and taste are greatly diminished. As to the visual functions, they have remained normal. Ophthalmoscopically, the papillary stasis has disappeared, to give place to an enlarged, flat papilla, with diffuse edges and uniform, yellowish-gray, atrophic tint, with normal vessels; the pseudo-atrophy of the papilla, following a stasis of prolonged duration.

If one seek to explain the above-mentioned facts, it is necessary to pass in review the various theories, which are in vogue, on the pathogenic mechanism of papillary stasis. The first, as to date, of these theories, that of von Graefe, ascribes the papillary swelling to the arrest of venous circulation of the optic nerve, caused by pressure of the cerebral tumor on the venous sinuses of the cranium. It appears to be totally abandoned, now-a-days, or reserved for exceptional cases, in which symptoms of venous stasis predominate over those of serous imbibition of the papillary tissue. Schmidt-Manz's theory, according to which the increase of intracranial pressure forces the cerebro-spinal fluid into the subdural sheath of the optic nerve, and brings about the stagnation of this fluid at the ocular end of the sheath, this theory already better explains the various peculiarities presented by cases of choked disc. At the same time, since it does not well explain the swelling of the nervous tissue itself, any more than it does the inflammatory symptoms which very often complicate the stasis, Deutschmann has believed it necessary to seek this explanation in the presence of pathogenic microbes, in the stag-

nant, cerebro-spinal fluid. This presence is not, however, absolutely necessary, and the phlogogenic action ascribed to micro-organisms could also belong to injurious chemical substances developed in the same fluid. This leads us to the opinion of Parinaud, for whom the papillary œdema and the opthalmoscopic and functional symptoms that accompany it, are only one of the manifestations of the cerebral œdema which complicates most cerebral tumors. The optic nerve, and especially its intra-ocular end, Parinaud says, in substance, constitutes an expansion, visible during life, of the cerebral substance. When this substance becomes œdematous, we see this œdema with the ophthalmoscopic, on the papillary tissue. The inflammatory changes which complicate this condition, such as the interfibrillary, connective tissue proliferation, accumulation of embryonic cells, moniliform swelling of the nerve-fibres, new growth of vessels, these changes, which may be interpreted as functional derangements, are perfectly explicable by the action of an œdema extended to a delicate tissue. Let us note also the theory of Benedikt, who claims that the papillary lesions are due to local, circulatory disturbances, following the influence of the tumor on certain vaso-motor centers. This theory, which has not found many advocates, may nevertheless serve to explain, perhaps, those rare cases wherein the papillary stasis is more marked on one side than on the other, and especially of this fact, not yet clearly understood, that little tumors (like tubercles, susceptible of complete resorption, for instance) often produce choked disc, while tumors, sometimes enormous, develop without any ophthalmoscopically visible change.

Whatever may be the ultimate cause, the increased pressure in the cranium, doubtless the consequence of hindrance to the venous, cerebral circulation and consecutive to exaggerated production of the cerebro-spinal fluid, must play the principal part in the genesis of choked disc. This idea finds a categorical confirmation in cases where, as the result of surgical intervention, the papillary stasis has disappeared, although it was found impossible to extirpate the tumor, but because the cerebro-spinal fluid has escaped, for a time, through the opening made by the trepan (observations of Bruns and Saenger). This increased pressure is

likewise proved by the case of intracranial hemorrhage, of traumatic origin, with choked disc, of which I have reported two examples above, one of Professor Panas' and the other my own.

Panas has had, indeed, occasion to make the autopsies in several cases of this kind, and has found that blood, mixed with cerebro-spinal fluid, had extended along the sheath of the optic nerve to the papilla. Finally, Irving reports a case of a wounded person, the victim of intracranial, hemorrhagic effusion, with papillary stasis, where evacuation of the blood, by trepanning, caused the œdema of the papilla to rapidly disappear.

After what I have said, above, I do not need to insist, at length, as to the *treatment* of choked disc. I mean, of course, the medical treatment, which can always be tried before a surgical intervention, supposing that the latter be possible. The grouping that I have tried to make, for curable cases of choked disc, will aid us in stating the indications that may present themselves. Choked disc, occurring without appreciable cause, without definite cerebral symptoms, in an anæmic subject, may be favorably influenced by tonics, mainly ferruginous, and derivatives (purgatives, cupping, flying blisters, etc.), together with appropriate hygiene. It is evident that a victim of papillary stasis, with syphilitic antecedents, ought to be put under as active specific treatment as he can bear. The indications are more difficult to state, as to the medical treatment of the tuberculous. Creosote and, even more, iodoform, are generally recommended in tuberculous, ocular affections, and, for my part, I have seen the latter clearly influence, favorably, cases of tuberculosis of the conjunctiva and iris, especially. Hence it seems to me worth while to try it regularly in meningo-encephalic tuberculosis, especially since this affection constitutes a somewhat unsatisfactory domain for the surgeon. Baginsky likewise recommends, in tuberculous meningitis, iodide of potassium. Hughlings Jackson extols this medicament, generally, in cases of choked disc, and it may at times be useful in cases of papillary stasis with cerebral symptoms of very slow development, such as I have placed in the last category. Finally, if the papillary stasis is due to an intra-cranial, hemorrhagic extravasation, complete rest will suffice to bring about recovery, provided surgical intervention is not necessary, in order to stop

the source itself, of the hemorrhage, or to evacuate an effusion whose volume jeopardizes the very life of the patient.

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NASAL OBSTRUCTION.*

WITH PARTICULAR REFERENCE TO DEVIATIONS OF THE NASAL SEPTUM AND HYPERTROPHIC RHINITIS, AND A REPORT OF THREE HUNDRED AND FIFTY OPERATIONS.

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It was an old doctrine of Catlins'—"*geschlossener Mund hält gesund*," which freely translated means, "A closed mouth preserves the health." That this certainly, in a measure, is true can be proved when we consider the important functions of the nose, *i. e.:*

To warm and moisten the inspired air; to free it from dust and other substances. Its olfactory nerve examines the air for any odoriferous ingredients; its trigeminus tests it for chemical

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or mechanical irritating substances; it acts as a resonator and assists in producing the overtones. But surely its greatest importance is due to the fact that it is in many respects the most important organ concerned in respiration. Man was intended to be a nose and not a mouth breather. The normal passage of the current of air in inspiration and expiration is through the nose.

Sandmann has shown by experiments on guinea pigs that when their nostrils were tamponed, a much greater muscular effort had to be put forth (as shown by the æroplethysmograph) to get the same amount of air into the lungs, than when the nostrils were free. An infant, too, before he reaches the age when he begins to crawl around, fall down stairs, getting deviations of the septum, and inflammatory changes of the mucous membrane from "colds," naturally breathes through the nose. If a young sleeping child is observed closely it will be seen that the base and back of the tongue are pressed tightly up against the hard palate, (mainly due to atmospheric pressure), thus necessitating nasal breathing. Sandmann has demonstrated this fact, too, by his experiments on animals.

People suffering from nasal obstruction, have, for the same reason, attacks of dyspnœa. All surgeons are familiar with the fact that often in deep narcosis, when nasal breathing is interfered with, the tongue must be pulled out of the mouth, so overcoming its muscular resistance and allowing free respiration. The air in its passage over the turbinated bones, over such a large extent of mucous membrane, takes its moisture from the normal secretion in the nose, and its *warmth* as well, a work which the lungs would otherwise have to do.

The experiments of Aschenbrand (68) and Kayser (69), upon the inspired air, show that it is warmed by the nose to 30 degrees C., and freely saturated with moisture, which is of great physiological importance.

Let us briefly consider the important relations of the nose to the general health and to some of the special organs. The time is past when the specialties, and particularly that of the nose and throat, were looked upon with scepticism, and it is now generally admitted that pathological conditions of the nose, particularly those leading to nasal obstruction, have an important influence

on the general health. The three commonest conditions causing nasal obstruction, from my own experience at any rate, are hypertrophies of the inferior turbinate, deviations of the nasal septum, adenoids, and polypi, in the order named.

The well-known reflex or nasal asthma is one of the fairly common accompaniments of nasal *obstruction* or *irritation* (which is usually the result of obstruction). Although the poor much-abused nose has frequently been unjustly accused of being responsible for all sorts of reflex disturbances, even including epilepsy, and its importance in this respect has been exaggerated, it is nevertheless true, that certain reflex conditions, as asthma, mentioned above, nasal cough, sneezing, and certain ocular troubles, are due *partly* at least to some inflammatory affection of its lining membrane. If we consider for a moment the structure of the lower, and anterior and posterior ends of the middle turbinates, some of these reflex conditions may be explained. The portions of the turbinated bones referred to are covered with cavernous tissue. Its blood supply is rich; under its subepithelial layer is a net-work of wide, anastomosing veins. The great ease with which this cavernous tissue swells, the richness of the vaso-dilators possessed by the nose, with the cavernous character of the vessels of the mucous membrane of the inferior, and the posterior end of the middle turbinate, and the governing influences of the sympathetic branches of the trigeminus, may account for many of these abnormal conditions. Probably the most rational explanation, founded on a physiological basis, of the nasal reflexes, is the controlling influences of the nerves governing the blood vessels, in dilating and contracting them. These nerves are brought to the mucous membrane of the nose, from the medulla, through the trigeminus and also from the sympatheticus. Gaule (12) states in his classification of the vaso-motor reflexes of the nose, "That the reflexes of the sensory nerves of the nose on the blood vessels of other organs are undoubtedly the cause of many disturbances, which owe their origin to pathological processes in the nose, and are *cured* by correcting these." Franck has determined that these sensory nerves cause dilatation of the vessels, and so swelling of the mucous membrane of the nose.

Vicarious menstruation is an indication of the fact that the reverse is sometimes true, that is, the reflexes exerted by the sensory nerves of other organs on the blood vessels in the nose. That an obstruction in the upper respiratory passage, nose or naso-pharynx, is sometimes alone sufficient,—by cultivating a habit of faulty breathing and all its noxious accompaniments,—to cause asthma, has sufficient proof.

Bloch (2) has shown that an obstruction in the normal respiratory passage above the larynx may cause this reflex asthma, and that the beginning is the nightly disturbance in respiration. The observations of other authors, Riegel (3) and Hack (18), also confirm this.

Voltolini in 1891 first pointed out the frequent connection of nasal diseases (and especially polypi), with asthma. Schech (24) held that the change in the mechanism and chemistry of respiration, due to the swollen erectile tissue in the nose, caused the asthma, particularly in cases of general or local hyperesthesia of the nervous system.

M. O. Lederman (31) and Kjelman (30) report cases cured by nasal operations. In Kjelman's cases there were epileptiform seizures, which were ushered in by asthmatic paroxysms, and cured by cauterizing the turbinate. Whether it is true that these paroxysmal attacks are due to a trigeminus irritation transmitted to the respiratory center in the medulla, thus interfering with automatic respiration, whether the irritation extends further to the spinal nuclei of the nerves of the inspiratory muscles, as held by Gaule (10), or whether this asthma is due to the interference with nasal respiration (Bloch, Schech and others), there is no doubt that many cases of this kind are cured when the exciting causes are removed.

In the summary of operations for the commoner forms of nasal obstruction I have given briefly the histories of six such typical cases, cured by intra-nasal operation.

RELATION OF NASAL OBSTRUCTION TO DISEASES OF THE EAR.—Meyer, of Copenhagen (9), really first called attention to the relation of middle-ear troubles and adenoids in the naso-pharynx, and that adenoids were present in about three-fourths of the cases where the hearing was affected.

I do not think that the necessity of making an early diagnosis in cases of nasal obstruction in children,—and adenoid vegetations are very common from the third to the fourteenth or fifteenth year,—can be too strongly insisted upon. It is surely easily made . The constant mouth breathing gives the children a characteristic facial expression. The mouth is almost constantly partly open, there are peculiar automatic movements of the lips, the eyes are dull; there is a drawing in of the alae nasi, the face has a stupid expression, and the children are backward in school, frequently due to the fact that the hearing is so much impaired. The arch of the hard palate becomes higher and pointed in front, and the more the alveolar processes on both sides come together the more marked this pointed condition becomes, and the teeth take on the characteristic abnormal position (Collier, 20). According to some authorities, too (Niemeyer, Guye, Mackenzie, Henoch), there is reason to believe that the inspired air is still partly laden with dust when it reaches the larynx, and with its low temperature irritates the laryngeal entrance. The frequent attacks of pseudo-croup that these children have is often due to this. The dried mucus gets between the vocal cords, the glottis becomes narrower and narrower, the voice hoarse, cough metallic, there are dyspnoea, cyanosis, until during a paroxysmal attack of coughing the child coughs out the tenacious mucus, and the breathing becomes free again. (See also article by Fink, 4.)

Osler (6), Fink (4), Dionisio (28) and Bronner (7) have pointed out the frequent association of enuresis nocturna with nasal obstruction, and particularly adenoids in children. The night terrors, too, are frequently due to this, *i. e.*, mainly interference with respiration, combined sometimes with indigestion from swallowing the abnormal amount of mucus. Brown (47) also mentions that digestive disorders result from the excessive amount of mucus swallowed. Bronner (7) states that about one-third of the children with neglected adenoids become deaf. I would give even a larger percentage than that, for out of fifty-two cases operated on by me during the past two years the hearing was markedly affected in thirty-six, and a good number of these, if left to themselves, would probably have gone on to almost complete deafness. How are you going to prevent a

child's hearing from becoming affected when there is a mass of unremoved adenoid tissue in the naso-pharynx, frequently obstructing the orifice of the eustachian tube, leading to stenosis of the tube, insufficient ventilation of the middle ear, a gradual sinking in of the drum from the greater external atmospheric pressure, and finally deafness? You might as well try, as Huxley says in his "Methods and Results," "to attempt to keep the axle of a wheel from heating when the wheel turns round very fast." The child is lucky if the process does not go on to destruction of the drum membrane and destructive processes in the tympanic cavity. Also Meyer (9). Gibson (16) reports a case of necrosis of the temporal bone and lepto-meningitis from neglected adenoids. Torticollis (Gillette, 53) has been reported due to them. Adenoids do not always atrophy if left to themselves (Delavan, 29,) and by the time they do irreparable damage may have been done the ears. As Thompson (15) puts it, "No case of deafness should be considered incurable until a thorough examination of the nose and naso-pharynx has been made."

RELATION OF NASAL OBSTRUCTION TO DISEASES OF THE EYE.—That a great many eye troubles are a result of some pathological process in the nose has long been known. Laurens (13) divides the disturbances of the eye that occur with nasal difficulties into:

1. Reflex disturbances that affect the general or special sensibility of the eye. (Neuralgia and photophobia).

2. Disturbances due to irritation of the nasal branches of the trigeminus (tears).

3. Reflex disturbances of motility, and

4. Nutritive and vaso-motor disturbances of the lining membrane of the eye (conjunctivitis, iritis, etc.). Winckler (25) found that in scrofulous affections of the eye fifty per cent. had diseases of the nose, and reports a case of neuritis retro-bulbaris which entirely disappeared after a large papillomatous mass was removed from the inferior turbinated. He examines all cases for adenoids. There is danger to the eye, too, from suppurative processes in the accessory cavities. According to Lunin (14): "The main danger consists in the extension of the inflammatory processes to the retro-bulbar space." Myles (32) refers ocular

troubles, when they occur with nasal diseases, to pressure on the nerves by hypertrophies, etc., in the nose. All oculists are familiar with the common occurrence of dacryo-cystitis and affections of the lachrymal duct with nasal obstruction. Pierce (27) mentions cases of reflex neuroses (diminution in the field of vision, and dilatation of the pupil), caused by nasal difficulties.

When we consider the vascular connection between the orbit and nasal cavity, the innervation of both organs from the same nerve trunks, and the connection by cellular tissue through the infraorbital fissure to the pharynx, a great many of these troubles may possibly be explained.

RELATION OF NASAL OBSTRUCTION TO THE GENERAL HEALTH.—All authors agree that certain nasal conditions influence the general health very decidedly—Collier (20), Bronner (77), Downie (44), Bergengrün (45).

Stork (46) mentions the relation of diseases of the nose to meningitis, and reports four cases of meningitis purulenta which, at the autopsy, were found to be due to suppuration in the accessory cavities. From this it is evident how necessary it is to remove polypi and find out whether the accessory cavities are involved. Zeim (72) and Kaufman (73) have pointed out the connection of antral empyema and polypi. Grünwald (74) states that "nasal polypi in the majority of cases are as good as pathognomonic for suppuration in the accessory cavities." Woakes (71) believed that polypi were the result of necrotic processes of the bone in the neighborhood of the polypi. Alexander (22) found out of 104 polypus cases treated by him, in thirty-five, empyema of the accessory cavities (antrum, ethmoidal and sphenoidal), and in one case frontal sinus suppuration. He comes to the conclusion that the polypi are secondary to these suppurative processes.

Pröbsting states that "recurring polypi in the hiatus semilunaris are almost pathognomonic for suppuration in the accessory cavities." Hajek (40) says, "It is probably not true that polypi are always the result of accessory sinus suppuration, nor can it be proved that they are directly the cause of sinus empyema."

Zuckerkandl (61), commenting on Woakes' theory of necrosis, states, "The statement of E. Woakes cannot be sharply enough

attacked," and again "I have in no case of polypus formation seen bone necrosis."

The anatomical investigations of Hajek (66), too, prove that Woakes' statements of true bone necrosis with inflammatory changes (as hypertrophies and polypi) in the nose are erroneous. Hajek concludes: "The changes occurring in the bone with inflammatory hypertrophy and polypi, which clinically are made evident by the lack of resistance, have nothing to do with caries and necrosis." Suppuration of the ethmoid cells may go on for a long time, even years, without producing changes in the bone. Out of forty-eight polypus cases treated by me during the past two years there was suppuration in the accessory cavities in ten; in eight suppuration in the ethmoid sinuses, and in two ethmoid and antral empyema. In two of the ten cases there was necrosis of the bone, but the one case occurred in an individual with a syphilitic history, and the other in a boy of fourteen years, who had had a severe attack of scarlet fever some months before, and who comes of a tuberculous family. So that the necrosis must be regarded as being probably due to these complications, and *not* a result of the purulent processes in the cavities.

The frequent occurrence of headache (Bresgen) and nasal cough is too well known to need more than passing mention here. The cough I have found to be frequently due to pressure of an enlarged turbinate against the septum (as shown by the fact that it often promptly disappears when the enlarged turbinated body is cocainized), or to the mechanical irritation of the excessive mucus excretion dropping into the pharynx, particularly when the person lies down. Snow (33) has reported hemicrania and other neuralgic affections of the head that were relieved by intra-nasal surgery. Other disorders, as recurrent facial erysipelas (Delavan, 29), hay-fever, migraine (Weaver, 43), and epileptic seizures, due to irritation and pressure, have been reported. That a great many of the cases of pharyngitis, especially the chronic follicular variety and many cases of laryngitis, as a result, are caused by nasal obstruction from the constant irritation of the pharynx, due to the breathing in of improperly warmed air, laden with dust, there is not the slightest doubt. Before giving the summary of the 350 operations I will briefly

give a few of the more important factors to be considered when operating for any of the different conditions causing obstruction in the nose.

I have found that the cases of obstruction that did the best after operation were those of simple chronic rhinitis (that is the condition of the inferior turbinated body between the *simple* rhinitis and the *chronic hypertrophic* rhinitis). With this form, 134 cases out of 209 engorged inferior turbinates, I have had decidedly the best results with the electric cautery. In doing this operation I follow the same general method described by Bresgen (60), Ingals (62) and Bloch (63).

The nostril to be cauterized is first sprayed with a mild alkaline solution (Seiler's or Dobell's), and then a five per cent. cocaine solution is rubbed with a cotton applicator over the swollen mucous membrane for ten or more minutes, when anæsthesia is usually complete. Then with the proper electrode (about No. 22 platinum wire running to a point) two or three parallel incisions are made from the posterior to the anterior end of the hypertrophy, the cuts being deep enough to just graze the turbinated bone. Nosophen powder is then insufflated and a light cotton dressing put in the end of the nostril, the patient being told to put in a little piece for about forty-eight hours whenever he goes out. There is very little reaction from the operation, and in six or seven days the eschar is thrown off or is ready to be taken off. The patient is given an alkaline spray to use once daily after the third or fourth day, and an ointment of iodol gr. iij, vaseline ʒ j. and lanoline ℥ ss. a small piece to be snuffed up the nose once daily to prevent the recurrence of the thin mucous crusts that frequently form on the cauterized surface for some time after the operation. It must always be remembered that not every chronic swelling of the inferior turbinated needs cauterization or other operations. Conservatism should be the rule here as in everything else. A great deal of harm can be done by an injudicious cauterization of the nasal mucous membrane. I made in many of my cases the test described by Klemperer (65), *i. e.*, swellings which, when cocaine is applied, *entirely* or *almost* entirely disappear, belong to the cases of *simple* rhinitis. Those cases in which the thickening of the mucous membrane remains after the application of cocaine

come in the category of hypertrophic rhinitis. This test cannot, of course, always be depended upon, but I have found that it is mostly true of hypertrophies. In the first class of cases a simple hyperæmia mostly causes the swelling, and it is in these cases that the indiscriminate application of the cautery does harm. The important function of the nasal mucous membrane must never be forgotten, and in all nasal operations, particularly cauterizations, as much mucous membrane should be preserved as will, after healing of the wound, normally cover the part. Although engorged and hypertrophic conditions of the inferior turbinated are the commonest forms of obstruction met with (Simpson, 70), and, although they cause in the majority of the cases obstruction to nasal respiration (Bloch, Hack), not every swelling which can be compressed easily with the probe must be regarded, as stated by Bresgen (*Pathol. u. Therapie d. Nasen*, etc., Krankheiten, 1889, p. 99, 98), as a diseased process that requires operation. A chronic enlargement must be distinguished from the erectile swelling, easily compressed by the probe, which is frequently influenced by emotional conditions disappearing and reappearing. Cases of hypertrophic rhinitis, where the hypertrophy is so great as to almost or *entirely* occlude the nostril, are not always benefited by simple cauterization. Out of seventy-five of these cases I had to use the hot or cold snare in ten, with, in these ten cases, no recurrence for the past year. The other sixty-five were relieved by cauterization. Different operations for correcting nasal stenosis due to hypertrophied turbinated bodies have been recommended from time to time: the use of the spoke shave or turbinatome by Abercrombie (8), who reports relief in sixty-two out of sixty-six cases treated in this way. The author says that "After turbinotomy a reproduction of the inferior turbinal mucous membrane *may* take place, and this was observed in several cases." I myself should not feel like doing an operation with this instrument if there is any doubt about this most important point.

The use of chromic acid for posterior hypertrophies (Weaver, 43), cold snare (Zarniko and Heymann), hot wire (Moldenhauer, 26), entire removal with chisel or scissors (Stipanits, 23), scissors (J. E. Hett, (19), cauterization (Ingals, 62), Bergen (60), Chirai (23), have been recommended for the relief of the nasal obstruc-

tion due to hypertrophies of the inferior turbinated body with varying success.

DEVIATED SEPTUM.—For no operation in the nose, perhaps, have more new methods of operating been tried than for deflections of the septum. It is in many respects, too, the most unsatisfactory operation of the nose, and everyone has some failures to record. This is largely due to the fact, and I found it so in a few of the first operations, that not enough allowance is made after operation for the fibrous tissue that cartilage unites by, which stretches and in time again produces the same deformity which the operation was supposed to remove. This can be overcome by leaving the vulcanite tube, pin, tampon or whatever is used to keep the septum in place after operation in long enough, that is, usually from four to six weeks. For this, as for hypertrophic rhinitis, many operations and other methods have been tried. Berens (37) uses cork splints; Hess (39), electrolysis, four to six sittings being necessary. M. Schmidth (67) uses trephines and saws run by an electric motor; Roe (58), crushing operation with the forceps. He has found deviations in from thirty-seven to ninety-six per cent. of all cases examined. Bosworth cuts off projecting spurs; Lennox Browne perforates with the cautery; Jarvis recommends removal of pieces with the ecraseur; Adams, forcible breaking of the septum, followed by plugs and splints; Roberts, multiple incisions with knife and fragments retained by pin; Ingals excises wedge-shaped piece; Steele, incision by punch; Watson (48) excises piece of the septum in the line of the deviation, and brings the bony part in position by the crushing forceps, holding the fragments in place by a pin; E. Mayer (75) uses the Asch operation and modifications of Asch vulcanite tubes; Gleitzmann (51), trephine and the Asch method; French (38), cutting operation; Allen loosens septum at base, under the mucous membrane.

Until the past year I had contented myself for this condition to remove the thickened cartilage and all spurs without attempting to correct the deviation itself, and in the majority of cases the nostril was made sufficiently patulous in this way. In the last twelve out of forty operations for deviation of the cartilaginous nasal septum I have used a modification of Schmidt's

trephine operation and Allen's method. The nose is thoroughly cocainized, a ten per-cent. solution being used, then with a round trephine a button or (if necessary) two are drilled out of the thickest portion of the septum along the line of the deviation. After bleeding has almost stopped the septum is loosened along the base, care being taken not to cut through the mucous membrane on the opposite side (a finger is placed in the other nostril so that the tip of the knife can be felt). A long, thin-bladed, blunt-pointed knife, with the end of the blade bent (a half inch from the point) at an acute angle to the shank, is then passed along the first incision through the base of the septum, and the septum loosened behind and in front by making two upward incisions, all incisions, of course, being made on the side of the convexity. The septum is then pressed into position and retained there by a vulcanite tube (Asch) of proper size. The tube must be left in place from four to five weeks in order to obtain the best results. In ten of the twelve cases operated on in this way the result was satisfactory in every respect. In two of the cases the tubes were not left in long enough, and the septum was again partially pulled over; in the other twenty-eight cases simply the projecting spurs were removed.

The fifty-three adenoid operations were, with four exceptions, operated on under cocaine anæsthesia, and all with properly curved Gottstein curettes. The naso-pharynx is swabbed with a four-per-cent. solution of cocaine for a few minutes, when the Gottstein is carried back and as much of the adenoid tissue as possible cut off with one sweep of the curette. The head is immediately thrown forward to allow the piece to drop out, and the blood to escape by the mouth and nostrils. If necessary the Gottstein is used a second and third time. The children are, of course, held in the lap of an assistant. In only four of the fifty-three operations was it necessary to use chloroform. The child is kept quiet for five or six days, and nothing done in the way of treatment except a daily insufflation of nosophen and a mild alkaline spray. In ten of the fifty-three cases there were recurrences of the adenoids within six months after operating, and they were again operated on in the same way. In twenty-six of the cases that I have been able to see occasionally there has been no recurrence for over a year.

Richards (59) and K. Franks (41) also use the Gottstein with good results; Franks operating under chloroform. Chiari uses the cold snare carried back through the nose. Lermoyez (42) and Dieulefoy have reported some cases of adenoids of tuberculous nature. These few cases, however, should never interfere with the operation, for there are few operative procedures followed by such good results.

The forty-eight polypus cases were all operated on with the cold snare, cocaine (four per-cent. solution) being used. Recurrences frequently take place, but these, I believe, could sometimes be avoided if the pedicles were entirely gotten out, which is, of course, not always possible. I always complete the operation, providing the nose can be entirely cleared, by curetting the seat of the polypi and then thoroughly cauterizing. Of the forty-eight cases operated on fifteen patients returned at different times (from five weeks to six months after the last operation) with a recurrence of the polypi. Of the eight cases (reported above), complicated by suppuration in the accessory cavities, the ethmoid sinuses were opened into and curetted in six. The antrum was opened in two. I do not think much hope need ever be entertained of a complete eradication of the polypi as long as an accessory sinus empyema is present. If this is cured, there *is* some chance to remove the polypi permanently. Nélaton (11) used zinc for cauterization after the removal of a naso-pharyngeal polypus to prevent recurrences, and then chromic acid. Dutt (35) has recommended local applications of teucruim for polypi instead of alcoholic sprays.

To recapitulate then: Three hundred and fifty cases were operated on, fifty-three operations for adenoids; forty-eight for polypi, seventy-five for hypertrophic rhinitis; one hundred and thirty-four for simple chronic rhinitis, and forty for deviations of the septum. The best results were obtained by the use of the cautery in the cases of simple chronic rhinitis, and the cautery and snare in the cases of hypertrophic rhinitis. Of the deviated septum operations the best results were obtained in ten of the twelve cases operated on as described above.

The operation with the Gottstein curette I have found best for adenoids, care being taken to remove all the adenoid tissue. In the polypus operations the best result was obtained by com-

pleting the operations with the curette (sharp spoon) and cautery. Operations, with few exceptions, were done under cocaine anæsthesia, and were practically painless.

Following are the histories of the six cases of asthma cured by intra-nasal operation:

Case 1. Mrs. C. L., aged 42. Always been fairly well, with exception of attacks of bronchitis and asthma, for the past few years. Posterior nasal polypus and several other polypi in right nostril; several in left. Removed June 8th and 10th, 1895. After operating no asthma for six months. Then another slight attack. Another large posterior nasal polypus removed from right nostril January 31, 1896, since which time has been entirely well.

2. Miss S., aged 17. Severe paroxysmal attacks of asthma. First seen December 28, 1894. On examining nose a large anterior hypertrophy of inferior turbinate, both nostrils, was found. Operation, cautery, January 2, 1895, right side; January 15 left side. This hypertrophy was removed with hot loop. With exception of one or two mild attacks no more asthma as far as known.

3. J. T., aged 12. First seen October 24, 1895. Engorged condition of inferior turbinate, both sides (simple chronic rhinitis). Asthma. January 11, 1896, cauterized right, and January 22, left hypertrophy. Asthma entirely relieved. Mother of this boy has had asthma for a long time.

4. S. B., aged 38. First seen December 2, 1895. Severe nightly asthmatic attacks, particularly during the winter. Both nostrils completely filled with mucous polypi. From February 1st, 1896, until March 2d, both nostrils were cleared, seven operations being necessary on account of rather severe bleeding each time. Asthma entirely cured. No recurrence to date.

5. Miss R., aged 19. Seen February 5, 1895. Asthma at times for the past three years. Deviation and enchondroma septi, right side; hypertrophy inferior turbinate, left nostril. Spur removed from the septum March 22d (not found necessary to correct deviation). Hypertrophy cauterized April 15th, since which time the asthma has remained away.

6. W. H., aged 18. Seen first December 21st, 1895. Asthma for past two years, every time he had an attack of acute coryza.

Hypertrophies of inferior turbinate, right and left nostrils. One cauterized January 5th, 1896; other January 20th. One recurrence four months later. Right hypertrophy again cauterized, and since then no recurrence of the asthma or coryza.

In conclusion it may be said that the relation that diseases of the rest of the body bear to the nose should *always* be considered and each patient well examined before the nose is operated upon. The best results will *not* be obtained if attention is not paid to the general health, and if all sorts of diseases are referred to the nose. As Virchow has aptly put it, "No specialty can prosper which isolates itself completely from the entire body of knowledge. No specialty can develop usefulness if it does not constantly strive to advance, if it does not work hand in hand with the other specialties."

[NOTE.—The very complete bibliography of this subject, prepared by Dr. Theisen, has been omitted for want of space and will appear in reprints, which may be had on application.—ED. ANNALS.]

172 WASHINGTON AVENUE.

For the ANNALS.

THE KNEE-JERK IN CHOREA.

BY H. L. K. SHAW, M. D.

Resident Physician, St. Peter's Hospital, Albany.

Following a suggestion received at the National Hospital for the Paralyzed and Epileptic, cases of chorea have been especially examined this winter at the dispensaries of St. Peter's and Albany hospitals with reference to the condition of the patellar reflex.

The condition to be described was present in a fair proportion of the cases, and was observed in several cases at London. It might be termed the "Choreic Knee-Jerk."

The characteristic feature is its irregularity. On striking abruptly the patellar tendon the reflex response is manifested in several ways. The foot may be jerked upwards a slight distance and suddenly stop for a portion of a second, and then complete its course and return, as in health.

It may be stopped in its upward course several times. More commonly these stops occur in the descent of the foot, the ascent being normal. At the height of the impulse the foot may remain stationary for a second or more, and descend normally or in the irregular manner before described. It is not uncommon to see these jerky movements during both the ascent and descent of the foot. The patellar reflex itself is not exaggerated except in a few cases, and often it is slightly diminished.

This reflex will be found in a large number of cases if care is taken to divert the child's attention, as by Jendrassek's method of reinforcement, and to have the limb perfectly relaxed.

It has been noticed in some cases with most pronounced choreic movements this symptom could not be obtained, while in those in which the choreic manifestations have been obscure this symptom was well marked.

Further investigation is needed to determine whether this symptom occurs in other diseases, and whether it would be justifiable to diagnose chorea, when this symptom is present and other manifestations of the disease are absent.

As an explanation of the phenomenon, it is suggested that, during the muscular activity involved in the knee-jerk, there is an interposition of the peculiar spasmodic contractions of chorea. In this way the excursion of movement of the leg may be interrupted at some point of its extension or ensuing flexion by a choreic spasm in some one or more of the muscles performing the movement. As the phenomenon is entirely of reflex nature, the irregularity can hardly be considered as a manifestation of incoördination.

As no mention of this symptom could be found in the literature upon chorea, the writer would have hesitated in presenting it to the profession were it not that its existence as a clinical fact has been proved in the cases observed here this winter.

The following case was obscure and presented few symptoms of chorea, but the choreic knee-jerk was well marked. This will illustrate the importance of this sign.

T. F., aet. 9, schoolboy, U. S.—Family history good. Has always been well and strong until last October, when he met with an accident, falling through a cellar grating and striking

and injuring his head. Several weeks after this fall he began to have trouble at night, when he would jump up in terror and cry, and seem to be awake, but would know nothing about this attack the next morning. During the past month the *pavor nocturnus* has been more severe. Patient is not especially irritable. Has had incontinence of urine, but this is improving.

Examination:

Pulse, 92; regular, fair volume, moderate tension.

Pulmonary resonance good.

Heart, normal intensity of sounds and impulse. Venous hum in neck.

Abdomen distended.

Skin, fair color. Small scar in scalp. Mouth breathing. Adenoids reached with finger. Cervical glands enlarged.

General mental aspect dull.

Slight choreiform movements occasionally noted on both sides when patient is placed in a strained position.

Foreskin retracted and no indication of irritation. Dribbling of urine.

Strength fair.

Knee-jerk—peculiar choreic movement. The movement of the leg and foot was interrupted, upon different occasions, at various points in the arc of its excursion, the interruption consisting of a momentary hesitation, which was followed by completion of the reflex act, generally in the normal manner.

This case is an especially suggestive one, as indicating a means of differential diagnosis in obscure conditions, in which the cardinal manifestations of chorea are not easily elicited.

Further observation is needed to establish the exact value of the symptom.

Clinical and Pathological Notes.

Sarcoma of the Kidney. Nephrectomy. Recovery.

A CASE FROM THE SURGICAL CLINIC OF THE ALBANY HOSPITAL.

The patient who is the subject of the following clinical report was referred for treatment to my service in the hospital by Drs. Robb and Frazier.

David M., aged three, a native of the United States, was admitted to the Albany Hospital December 2, 1896. The history given by the father was as follows: Some six weeks previously a tumor in the abdomen was accidentally discovered while giving the patient a bath. Until this time it had produced no symptoms, and, in so far as it's parents were able to see, the child was in good health. Immediately after its discovery Drs. Frazier and Robb were called to examine it. The child was kept under observation for a short period, and the tumor was found to be rapidly growing. After some preliminary arrangements, the child was brought to the hospital and I made an examination, finding the growth to occupy the left side of the abdomen, extending nearly to the umbilicus, and from a point just above the anterior superior spine of the ilium to within an inch of the border of the ribs. The tumor was smooth and apparently solid, although an obscure sense of fluctuation could be determined. It was partially movable. On further examination a distinct area of resonance existed between the border of the tumor and the spleen. The descending colon evidently lay along its internal surface. The examination of the urine showed nothing abnormal in that secretion.

The child at this time was showing the effects of the rapid growth of the tumor. His appetite was impaired, he was losing flesh and rapidly becoming anæmic. He had suffered previously from none of the diseases of childhood, and had been regarded as remarkable for his rugged constitution. There was a history of malignancy in the family. From the history of the growth and the result of the physical examination, a diagnosis of sarcoma of the kidney was made, and the probable fatal termination of it within a short time, if untreated, told to the father. At the same time the danger of nephrectomy for so large a growth on so young a patient was carefully pointed out to him. After explanation the risks of the operation were assumed by the parents, and it was undertaken on December 8, 1896, after a few days of preliminary treatment.

The patient, well wrapped up in flannels, was placed on his left side, with a firm bolster under his loin, and an incision five inches in length made as follows: Beginning at the point corresponding to the external border of the quadratus lumborum

muscle and a finger's breadth below the twelfth rib, an oblique incision was made to a point one inch above the anterior superior spine of the ileum, and then carried in an upward direction for an inch. The tissues were divided by layers, great care being employed to control hemorrhage at every step of the operation. The tumor, encapsulated, was first uncovered posteriorly and released from the surrounding tissues without any serious loss of blood. The peritoneum and the descending colon were dissected from the anterior and internal surface with great care. The enucleation of the tumor down to the pedicle was completed with little loss of blood, and the peritoneal cavity was only entered by a rent in the peritoneum less than two inches in length. With the tumor free, a clamp was placed on the ureter and vessels, and the tumor removed. This large cavity was immediately filled with pledgets of sterilized gauze, and the rent in the peritoneum closed by a continuous fine silk suture. The pedicle was now secured by a rather firm silk ligature tied *en masse*, and the clamp removed. A small glass drain was placed at the posterior angle of the wound and the incision closed by *etage* catgut sutures, three layers being employed. A full dressing of sterilized gauze cotton was now placed, and the child put to bed, given a small enema and surrounded by warm blankets. The recovery from the anæsthetic was satisfactory, and no serious shock from the operation was observed. The secretion of urine for the first twenty-four hours was eight ounces, after which it gradually increased until the daily secretion was about twelve ounces. The wound, except at the tract of drainage, healed by primary union. The convalescence of the patient was uninterrupted, and at no time after the operation was his condition a source of anxiety.

The tumor, weighing a little more than two pounds, was examined and found to be a round-celled sarcoma, springing from the cortical portion of the kidney, and it involved nearly its entire substance. On the superior portion it had burst the capsule and was infiltrating the surrounding tissues. This infiltrated tissue was removed as far as possible at the time of operation.

The chief interest in this case lies in the character of the tumor, the youthfulness of the patient ,and the method of operation.

Abdominal tumors developing in children before the fifth year are very frequently sarcomatous in character. Within a few years a considerable number of such cases have presented themselves for treatment. Not only is the kidney frequently involved, but also the liver and spleen.

Careful consideration of the clinical history of cases, with the exclusion of syphilis and long-standing suppurative disease, will usually exclude any degenerative processes occurring in these organs. Unfortunately until recently no serious effort has been made to treat the condition surgically on account of the youthfulness of the patients. Contributions a few years since by Drs. Abbe and Weir have placed surgical intervention upon an entirely different basis. From my satisfactory experience in this and other cases I am inclined to the belief that an effort should be made in every case of sarcoma of the kidney in children to do a complete nephrectomy, even though the tumor has reached a considerable size. The incision employed in this case to reach the kidney presents distinctive advantages over either of the older methods for doing nephrectomy, and there is a very satisfactory field of operation. With a little care in cases of tumor of not too great size a kidney may be removed by this method without opening the peritoneal cavity, together with a considerable portion of the ureter. I am of the opinion that this method of operating will entirely supplant the older operation for abdominal nephrectomy as well as the employment of the lumbar incision in many cases.

The child returned home at the expiration of three weeks, the wound entirely healed, save a small drainage tube sinus.

W. G. MACDONALD.

Scarlet Fever.

ODD SOURCE OF INFECTION.

A few years ago I was called to attend two children, who developed simultaneously scarlet fever.

As there was no other case in the neighborhood, and, as far as I know, none in the city, I was at a loss to account for the source of infection.

One day, when I had apparently exhausted every means of inquiry, the mother asked me if the infection could be carried in

a letter. She then told me that about a week before the children were taken sick she had received a letter from her sister in Ireland, which contained the information that the whole family were just recovering from scarlet fever.

As my patients had handled and played with this letter, I have no doubt that it was the carrier of the disease germs.

J. V. HENNESSY.

Editorials.

Voluntary Admissions to Institutions for the Insane.

In many of the United States, perhaps a majority, during the last twenty years, the dependent relation of the insane has been accepted, and the entire responsibility for the care of this helpless class has been assumed by the construction, organization and maintenance of hospitals and asylums. The charitable system thus developed has been protected by the appointment of supervisory bodies, with full powers of inspection and investigation. At the same time, in a somewhat paradoxical manner, rigid laws have been enacted and regulations established for the restriction of abuse, as if to forestall the contingencies, for the management of which proper safeguards had been established. Among other changes more stringent forms of commitment have been required, with such limitations that physicians are loth to certify to the insanity of the patient unless his mental symptoms have become so pronounced as to be manifest to the average jury. This is in spite of the fact that official inspection of nearly one hundred thousand commitments by the lunacy commissioners of England, and of New York, has failed to reveal one case of illegal detention in an asylum for the insane. As a result, numerous patients suffering from mild forms of mental derangement, or from incipient insanity, who realize their condition and its probable tendencies, and who desire treatment in season, either as an abortive or prophylactic measure, are excluded from the institutions best equipped to care for them.

As a remedy for this injustice, it is suggested that the system of voluntary admission, which prevailed until the revolution of

the last few years in lunacy matters in New York, be again adopted.

The admission to hospitals for the insane of patients who voluntarily seek treatment in them would do much to abolish the prejudice which now exists in the public mind in regard to commitment. These hospitals should not be considered as places of last resort, but should have opportunities for treating cases in the incipiency, as well as in the full development, of insanity, and should be hospitals in fact as well as in name. The propriety of admission of patients who voluntarily seek it would be decided by the physician in charge. This is an extraordinary power, but is conferred upon men who have been trained to understand their responsibilities. And an illegal detention would be so decidedly adverse to public sentiment, and so disastrous to the best interests of the establishment, that there is little chance of its occurrence.

The beneficial effects of voluntary admissions are seen in the results of the laws upon this subject in Pennsylvania and Massachusetts. In Pennsylvania a patient is permitted to commit himself voluntarily for a period of thirty days, and then to sign a renewal. This period was originally seven days, but was extended on the recommendation of the State Board of Charities. It is a constant practice of the private hospitals of the State to receive patients who commit themselves for medical treatment for nervous and mental conditions, and for the alcohol and drug habits, and the average results have been good. Numerous patients from New York, excluded from the hospitals of their own State, have sought and have received treatment in those of Pennsylvania.

In Massachusetts a similar practice prevails, in accordance with a law which has been in operation since 1891, that "the superintendent or keeper of any hospital, as aforesaid, may receive and detain therein as a boarder and patient, any person who is desirous of submitting himself to treatment, but whose mental condition is not such as to render it legal to grant a certificate of insanity in his case; provided always, that such boarder shall make written application for such treatment, and that he shall not be detained for more than three days after having given

notice in writing of his intention or desire to leave such hospital."

Dr. Cowles reported, in 1893, that in thirteen years 457 mental cases had been received into the McLean Hospital by voluntary commitment, representing all forms of insanity, and that much of the good work accomplished by this excellent institution had been with this class of cases.

Our hospitals for the insane should be given the same opportunities as hospitals for other purposes. They should be governed in a manner to secure the best results of treatment. There is no wisdom, propriety or reason in requiring that a person shall be moved in the incipient stage of insanity about the country, from house to house, from town to town, and from sanitarium to sanitarium, until the disease has progressed so far as to be fixed and permanent.

The physicians of New York should demand that methods equally advanced and equally enlightened with those of other commonwealths should be adopted for the protection of a large and important class of patients, and should be recognized in a lunacy system which stands among the first in the world.

Puerperal Fever.

Cullingworth, in a recent address before the Obstetrical Society of London, made the astounding, and almost incredible, claim that puerperal fever, in spite of antiseptic teachings, has not diminished in the last fifty years. From 1847 to 1880, inclusive, the mortality from puerperal fever was 1.6 per 1,000 births, while from 1880 to 1895 it has risen to 2.6 per thousand.

The highest mortality rate is found in districts where unskilled and ignorant midwives flourish, and where the sanitary conditions are most unsatisfactory. Although puerperal fever is practically a thing of the past in the best lying-in hospitals, there has not been a corresponding diminution in private practice. This he attributes to carelessness in minute details, and to the feeling of many practitioners that a few drops of carbolic acid or tincture of iodine in the water in which they wash their hands is strict antisepsis. He believes that simple antiseptic precautions conscientiously adopted would render puerperal fever as rare in private practice as it now is in the best lying-in hospitals. The statistics

of the New York State Board of Health show a more lamentable condition. If the number of births is estimated at about half again as many as the total deaths, the mortality from puerperal fever is at least twice as high as in England and Wales. It would seem as if it might be wise to give to the proper authorities power to investigate all deaths from puerperal fever, and thus curtail the unnecessary and disgraceful waste of life due to ignorant or careless criminal negligence.

Professor Koch and the Rinderpest.

No more striking evidence is needed of the progress of scientific medicine than the invitation extended to Professor Koch to investigate the Rinderpest in South Africa, and the ready acceptance which his explanation of the disease, its ætiology and character will receive from the medical profession all over the world.

Koch has not been able to demonstrate the ætiological factor in the disease, but has localized its seat in the blood, and has shown that, as in diphtheria, an antitoxic substance is generated which restrains the activity of the virus and prevents the development of the disease. When one considers the way in which such an epidemic would have been investigated twenty years ago, the present truly scientific basis of medicine becomes at once apparent.

Medical News.

ASSOCIATION OF THE ALUMNI OF THE ALBANY MEDICAL COLLEGE. — The program for commencement day and the twenty-fourth annual meeting of the association is as follows:

9.00 A. M. — Reception in library. Coffee and sandwiches will be served.

10.30 A. M. — Annual meeting in Alumni Hall.

The faculty address of welcome will be delivered by Prof. James P. Boyd, M. D. The historians for '47, '57, '67, '77 and '87 are expected to present class histories, and the necessary business, including the president's address and election of officers, will be transacted.

4-6 P. M. — Reception by representatives of the faculty, Bender Laboratory and Alumni Association at the new Bender Hygienic Laboratory. A collation will be served.

This reception is substituted for the dinner, which has been a feature of previous meetings, with the hope that its informal character, which will enable the alumni to renew old friendships and form new acquaintances, will present a pleasing and welcome change. An opportunity will also be given to inspect the building and equipment of the laboratory and learn the methods pursued in this latest addition to the facilities for a medical education offered by our *alma mater*.

8.00 P. M. — Commencement exercises at Odd Fellows' Hall.

Address by Rt. Rev. William Croswell Doane, D. D., Bishop of Albany.

Seats will be reserved for members of the association.

It will be noticed that this program enables out-of-town members to leave for their homes on earlier trains than has hitherto been possible.

Alumni who are unable to attend are requested to send a letter to be read at the meeting. WILLIAM HAILES ('70), M. D.,
President.

JNO. BEN. STONEHOUSE ('71), M. D.,
Corresponding Secretary,
5 High Street, Albany, N. Y.

BRITISH MEDICAL ASSOCIATION — MONTREAL MEETING. — Dr. I. V. Anglin, secretary of the Psychological Section, kindly sends the following letter to the ANNALS:

"While I am not authorized to make any official announcement, the matter of delegates is as follows:

"Any British subjects may, on complying with certain formalities, become members of the British Medical Association.

"When the idea of holding this meeting outside of Great Britain was first entertained, it was hoped that Americans might join the society on the same footing as Canadians. But on reflection, when it was taken into consideration that this is also the year of the international gathering at Moscow, it was thought that this course would be indiscreet, and in bad taste. So the plan now is to invite a number of representative Americans to be

present and join in the meetings. Thus, in our section, I have been asked to lay before the executive a number of names of those in the United States most prominent in alienistic circles, and I have submitted some fifteen names. When last I heard, they had some 500 names of guests to be invited, so there should be ample representation.

" Every one here regrets that the mode of entrance is not more open, but the association would have laid itself open to a charge of apparently inaugurating a rival international meeting had they done this year what they never did hitherto."

THE SANATORY CLUB, OF BUFFALO, was organized February 19th, 1897, with a membership of thirty-five, consisting of physicians, attorneys, architects, plumbers, builders, and others interested in the subject of public health.

—*The Laryngoscope*, published in St. Louis, has been selected as the official organ, for the year 1897, of the Laryngological Section of the New York Academy of Medicine.

SCHENECTADY COUNTY MEDICAL SOCIETY. — The following officers have been elected for 1897: President, Dr. William L. Pearson; Vice-President, Dr. Janet Murray; Recording Secretary, Dr. Joseph Raymond; Treasurer, Dr. Henry C. Van Zandt.

—Dr. H. D. Goetchius (A. M. C., '95) has been appointed a member of the New York city Board of Health.

— Dr. Eugene H. Goodfellow (A. M. C., '94) has been appointed assistant physician at the Eastern Michigan Asylum for the Insane, Pontiac, Mich.

State Medicine.

EDITED BY HARRY SEYMOUR PEARSE, M. D.

The Fight against Tuberculosis.—Since the beginning of a successful crusade against diphtheria three years ago another and a more bitter warfare has been initiated against a foe whose tendrils are meshed defiantly and in seeming security in a deep and solid soil—"Tuberculosis." Scientists, physicians and laymen

are massed against it. State, city and municipality have added their arms in battle.

The status of this article will enable us to deal only with the law and the authorities in their workings with reference to the disease.

The laws governing the crusade are based on the old and reliable principle, "Eliminate the cause and you eliminate the effect;" and prophylaxis is the watchword.

The New York City Board of Health has been most prominent in its activity in this direction. On January 12th, of this year, Drs. Biggs, Prudden and Fowler made a report upon the prevalence of tuberculosis in that city, and submitted pertinent recommendations. They reviewed the past work done by the department with its limited resources; stated clearly the impotent effects of the methods then employed in fighting the disease, and the absolute necessity of more complete and comprehensive control; put forth in clear terms the existing sources of danger, and told of the want of a special hospital for the reception of tubercular cases.

Their recommendations were as follows:

"*First*—That such action be taken by the health board as seems necessary and proper to at once secure the provision of hospital accommodations, under its charge, for the care of the poor suffering from pulmonary tuberculosis, who, as active sources of danger to the community, may properly come under its supervision.

"*Second*—That an amendment be made to the sanitary code declaring that tuberculosis be officially considered a communicable disease, and formulating regulations under which its sanitary surveillance shall be exercised.

"*Third*—That all institutions in this city which admit and treat cases of pulmonary tuberculosis be subjected to regular and systematic inspection by officials of this board, and that specific regulations be established for the conduct of such institutions, in accord with the proposed amendment to the sanitary code.

"*Fourth*—That the scope of the measures designed for the education of the people in regard to the nature of pulmonary tuberculosis, and the methods to be taken for its prevention, be

enlarged and a closer sanitary supervision be maintained over individuals suffering from this disease in the densely populated tenement districts and in the crowded workshops and public buildings of this city."

That the board acted promptly on these recommendations is shown by the following amendment to its sanitary code, made January 19th, just one week later.

"Pulmonary tuberculosis is hereby declared to be an infectious and communicable disease, dangerous to the public health. It shall be the duty of every physician in this city to report to the sanitary bureau in writing the name, age, sex, occupation and address of every person having such disease who has been attended or who has come under the observation of such physician for the first time within one week of such time. It shall also be the duty of the commissioners or managers, or the principal, superintendent or physician of each and every public or private institution or dispensary in this city to report to the sanitary bureau in writing, or to cause such report to be made by some proper and competent person, the name, age, sex, occupation and last address of every person afflicted with this disease who is in their care or who has come under their observation within one week of such time. It shall be the duty of every person sick with this disease and of every person in attendance upon any one sick with this disease, and of the authorities of public and private institutions or dispensaries to observe and enforce all the sanitary rules and regulations of the board of health for preventing the spread of pulmonary tuberculosis."

This, we assume, is but the preliminary step towards the complete control of all tubercular cases within its jurisdiction.

Within the past year all milch cows within the city limits have been examined with reference to tuberculosis. On the other hand, it is widely and shamefully known that the State does not furnish its board with sufficient means to assure its citizens the same protection. In fact, it hampers those cities, such as New York, that would protect their people. For instance, New York city receives most of its milk from outlying counties, many of them in New York State, where there is no systematic inspection of cattle. The evil that can accrue from such a state of affairs is shown by the annual report of the cattle commissioners of Massa-

chusetts for 1896, which shows that over 5,000 heads were condemned for tuberculosis during the year.

The New York State Board has repeatedly recommended a quarantine and a systematic inspection of cattle, but the legislature will not materially assist it.

New York city is not alone in her aggressive action; the health authorities of Boston, Philadelphia, Chicago and St. Louis have approved and some have followed her example.

The ordinance of this board prohibiting expectoration on the floors of public conveyances has been followed by similar ordinances in Brooklyn, Boston, Chicago, Rochester and other cities, and Saranac Lake, New York.

Another important move in the right direction is the agreement between the Secretary of Agriculture and the Canadian Minister relative to "International animal quarantine," and which in part "provides that each country shall accept the veterinary certificate of the other as final, and that they shall keep each other informed of any outbreaks of contagious disease; that a quarantine of from ninety to fifteen days shall be imposed upon cattle or ruminants, or swine coming from European countries in which pleuro-pneumonia or foot and mouth disease exist; that breeding cattle shall have certificates of freedom from tuberculosis, or submit to a week's quarantine, and cattle from feeding or stock ranches must have certificates of freedom from disease of all kinds. Sheep may be admitted subject to inspection and slaughter if disease appears. They are also accorded privileges of passage in bond through ports without inspection."

So far the New York Legislature during its present session has done nothing to advance or assist the work. The city boards, under great difficulties and in the face of legal opposition, have been compelled to fight for the inspection of milk and cattle; doing work which the State has virtually thrust upon them by neglect.

We earnestly hope that before adjournment it will pass a law providing for cattle quarantine and inspection. It is bound to come—the sooner the better. The movement against tuberculosis is not of a mushroom character—it is well started and will continue until a vast amount of good has resulted.

An Act to Prevent the Distribution of Impure Ice.—A bill has been presented in the senate by Mr. Nussbaum, and is now in regular order for final passage, entitled "An act to prevent the cutting, harvesting and sale of unclean, impure or unhealthful ice," providing:

1. That no person shall cut, harvest or collect any unclean, impure or unhealthful ice from any body of water, nor shall such ice be stored, sold, offered for sale, furnished, given away, or used for any purpose whatever, under severe penalties.

2. That, in the event of any complaint made to any local board of health concerning the quality of ice or the location of a field, it shall be the duty of such board to investigate the same, and, if complaint is well founded, to prohibit the use of such ice for any purpose whatever, or of such field for harvesting.

3. That it shall be the duty of the local board to inspect from time to time all ice sold or offered for sale in their locality, and to prosecute any person violating any provision of the act.

4. That the penalty for violation, upon conviction, shall be a fine of not less than one hundred or more than two hundred and fifty dollars, or imprisonment not to exceed sixty days, or both.

5. That in the cities all expenses incurred in prosecutions shall be paid by the cities; in the towns and villages, by the State.

This bill is a timely and a welcome enactment. It is complete in detail, prohibiting the use of impure ice even for storage purposes.

The writer has witnessed some of the conditions which, if the bill becomes a law, it will abolish—in the capacity of State health inspector he has investigated stagnant ponds used for ice harvesting, surrounded by pigsties and outhouses, and used as depositing grounds for sewage matter by the inhabitants of close-by houses.

Though there was considerable quibbling in making up the bill, it has been favorably received, and we hope that it will soon become a chapter of the laws of the State.

A Bill to Improve the Records of Vital Statistics.—A measure has recently passed the higher branch of our legislature amending previous laws relating to vital statistics, with the following provisions:

1. Every local board shall supervise and make complete the registration of all births, marriages and deaths occurring within the municipality, and the cause of death; and, after registration, forward the certificates to the State bureau of vital statistics.

2. The person making such certificate shall be entitled to a sum of twenty-five (25) cents therefor, which shall be paid by the municipality.

3. Such certificates or copies thereof, when certified to by an officer of the local board, shall be evidence in all courts and places of the facts therein stated.

This bill, though simple, is of considerable importance in that it will tend to give the State bureau of vital statistics a necessary and more complete record of all births, marriages and deaths occurring within the State.

The twenty-five-cent fee is an inducement for the reporting of all cases to the municipal boards.

Midwifery Laws. — The Governor has recently signed bills controlling the practice of midwifery in two counties of the State. They are essentially identical in their provisions, affecting the counties of Erie and Chautauqua, and authorizing the county judge of each to appoint a board of examiners, consisting of physicians, which board shall control by examination all persons desiring to practice midwifery within said counties.

In the much-regretted absence of any general State law regulating the practice of midwifery, these laws are very acceptable, and show a praiseworthy spirit of their promoters.

The fact is, we are sorry that midwives are allowed to practice either with or without restrictions; but they seem to be a necessary evil, and as such it is the duty of the State to regulate their work and minimize the harm which they can and are constantly doing. Indiana has such a law, not a severe one, but much better than none at all.

Physicians and laymen alike are acquainted with the manifold existing evils of the practice, and are heartily in accord with any movement to lessen them.

Obituary.

DANIEL J. BARRY, M. D.

Dr. Daniel J. Barry died at his residence, 716 Union street, Schenectady, N. Y., March 17th, 1897, aged 37 years. He had been in delicate health for more than a year, and spent the winter of '95-'96 in the south. The past winter he had exercised great prudence, and at the same time attended a large practice, until a warm change caused him to lay aside a heavy coat, and while driving he was caught in a heavy rain-storm. Pleuro-pneumonia ensued and aggravated the Bright's disease from which he was suffering, and after five days' confinement in bed death followed.

He was much esteemed by the community on account of his upright character, and his unobtrusive ways won him friends both inside and outside of the profession.

The funeral services took place at St. John's Church, and a large concourse attended. The remains were taken to Lee, Mass., for burial. He was never married.

Dr. Barry received his education in the schools in Lee, Mass., his birthplace, and was graduated at the Albany Medical College in 1888. He was a member of the medical staff at the Ellis Hospital, and the Schenectady County Medical Society. An aged father and two brothers survive him. J. F. MCE.

Book Reviews.

The Diseases of Infancy and Childhood. For the use of Students and Practitioners of Medicine. By L. EMMETT HOLT, A. M., M. D., Professor of Diseases of Children in the New York Polyclinic; Attending Physician to the Nursery and Child's and the Babies' Hospitals, New York; Consulting Physician to the New York Infant Asylum, and to the Hospital for the Ruptured and Crippled. Pages 1117. New York. D. Appleton & Co. 1897.

In his Introductory Lecture on the Diseases of Infancy and Childhood, Charles West states that fully one-third of the patients met with in practice are children. And yet up to within the last ten years there has been little special training in the diseases of children, and it has been quite possible for a physician to have secured his diploma and to have commenced practice without having seen a single sick child. In this decade, however, the advance in paediatrics has been quite commensurate with that in other

special departments, and the number of excellent books is now increased by this very valuable treatise by Dr. Holt. The feature in these works which immediately attracts attention is the great elaboration of the subject of infant feeding. The tendency in this direction was indicated in Dr. Goodhart's Manual, in the successive editions of which it was given constantly increasing attention, and the subject has attained most extensive consideration in the recent work by Rotch, and the volume now under consideration. Thus, in a total of eleven hundred pages the sections on Nutrition and on Diseases of the Digestive System cover over three hundred, a proportion about twice as great as in a text-book on the general practice of medicine. Perusal of these sections alone is sufficient to impress the great differences between the pathology of childhood and of adult life, and to emphasize not only the need of special study and observation on the part of the practitioner, but of such books as Dr. Holt's for the dissemination of this valuable and rapidly changing knowledge.

Part I., containing three chapters, treats of the Hygiene and General Care of Infants and Young Children; the Growth and Development of the Body, and Peculiarities of Disease in Children. Part II. is divided into ten sections, after the usual classification of disease. The first and second sections are devoted to diseases of the newly-born and to nutrition, and in the care thus given to the first two years of life, the author has covered a neglected field, and has rendered a distinct service. His observations upon the danger of transmitting tuberculosis to the infant by means of milk are quite decided. Although there have been a few cases in which the infection was carried in this way, he believes them to have been extremely rare. In one hundred and nineteen autopsies upon tubercular patients, nearly all infants, there was not found one with the primary lesion in the gastro-enteric tract. Of 1,943 fatal cases of diarrhœa collected by the author, only three per cent. had the breast exclusively, showing that feeding is one of the most important factors in the production of diarrhœa, including over-feeding, too frequent feeding, and the habitual use of improper food. Milk is especially a vehicle of specific infection, either from contamination or from fermentation changes, and the results of its use are surprisingly quickly manifested.

In the local treatment of tubercular peritonitis, the only curative measure is surgical, and the author can say nothing in favor of aspiration except for purposes of diagnosis. He quotes the indications given by Aldibert, and finds that the results are so satisfactory that the question of operation should be considered in every case. In purulent pericarditis incision is also preferred to aspiration. Since the appearance of Holt's book, H. Bohm has given a résumé of fifteen reported cases of pericardotomy (*Deutsche medicinische Wochenschrift*, No. 48, 1896), with a mortality of seven, only one of which, however, was attributable to the operation.

In the discussion of aneurism and atheroma, the author states his belief that chronic diseases of the blood vessels are exceedingly rare, yet that a

sufficient number of observations have been recorded to show that even young children are not exempt. Up to 1890 Jacobi has collected twenty-eight cases of aneurism in patients under twenty years of age. In addition to these the author has found reports of seven cases of atheroma in young subjects.

In the treatment of convulsions the author speaks plainly for the need of quiet and against the use of the time-honored mustard bath, which necessitates great disturbance of the patient. He believes that chloroform is undoubtedly the most reliable remedy for an immediate effect, and at the same time it is being given chloral should be administered *per rectum*. Morphine should be given hypodermatically when chloral is ineffective, and when the heart's action is weak this is probably the best of all remedies. In view of the wide-spread use of the hot bath for the relief of convulsions, the author might, perhaps, have been justified in more active denunciation of such measures. The convulsions of childhood are often reflected from some peripheral irritation, and the struggle for an hour in a tub of hot water seems so positively contra-indicated as to warrant its condemnation. The procedures recommended by the author give prompt results, and may be fearlessly advocated.

In the section upon tetanus we do not find any description of the facial phenomenon described by Chvostek. The increased electrical excitability is mentioned, but the reaction peculiar to this disease is not described.

In the discussion of infantile spinal paralysis, no mention is made of the occasional appearance of the disease as epidemic, though note is made of the disposition of many authors to regard it as infectious. Fifty pages are given to diphtheria. At this day it is, perhaps, too late to question the value of antitoxin, and yet this method of treatment has many opponents. The author's experience gives almost conclusive weight to his views, and he favors its use, both for treatment and for prophylaxis. After reviewing the real and alleged dangers from antitoxin injection, he decides that no evidence has been adduced as to its danger, or injurious effects which should deter any one from its use.

Dr. Holt's book is a large one from which to make extracts for the limited space allotted for a review. A few have been made, not in a spirit of criticism, but for the purpose of illustrating in some slight manner the fair and judicial aspect in which important problems are discussed. Some attention has been given to pathology, and in this we agree with the author that such knowledge is indispensable to the correct understanding of disease. At no point have we noticed that these pathological discussions are carried into the refinements of special knowledge.

The attempt has evidently been made to avoid the development of special lines of investigation, and to keep within the limits of practical use, for men who need assistance in every-day work. We believe that the author has successfully accomplished his object, and that his book is one of the most helpful of those recently issued for the use of the profession.

Inebriety; Its Source, Prevention, and Cure. By CHARLES FOLLEN PALMER. Pages 109. New York, Chicago, and Toronto. Fleming H. Revell Company.

This little book is not strictly medical, but contains some sound mental and moral hygiene. The author recognizes the irresponsibility of the dipsomaniac, and perhaps considers the ordinary inebriate as less responsible than does the average physician. He does not describe the medical treatment of inebriety, but confines himself to moral methods of prevention and treatment, pointing out the necessity of training children in neurotic families, and describing the methods of gaining will-power and self-control in adults.

The book is evidently intended for general circulation, and will undoubtedly be of service to parents, teachers, and adult inebriates, as well as to physicians who wish to add moral treatment to their other therapeutic measures. R. G. C.

Guy's Hospital Reports for 1895. Edited by E. C. PERRY, M. A., M. D., and W. H. A. JACOBSON, M. A., M. Ch. Vol. lii., being Vol. xxxvii. of the Third Series. Published by J. & A. Churchill, Great Marlborough street, London. 1896.

This, the last volume of reports of the famous "Guy's," is an interesting and valuable contribution to medical literature. Unlike most hospital reports which are compiled for the benefit of the medical profession alone, it would in part be welcomed by the layman who is a student of human nature, or of notable men. It presents in graceful and loving terms a memorial of the life of "Arthur Edward Durham," a man whose nature made all who knew him love and respect him. Twenty-two of his thirty-six years on the staff of Guy's Hospital he was chief surgeon. He was a brilliant anatomist, a pioneer in modern surgery, and a man whose sympathy and genial good-will made him hosts of friends and no enemies. His death is mourned on both sides of the Atlantic.

The volume also contains eleven excellent papers written by the several members of the faculty, based upon the interesting and exceptional cases presented in the wards during the year. These papers are singularly complete, giving every important detail of the cases. The work is garnished with several wood cuts and charts, and a list and description of the forty pathological specimens presented to the Museum during the year.

The custom of compiling hospital reports is an excellent one, but one which is sadly neglected in this country. H. S. P.

Sixteenth Annual Report of the Board of Health of the State of New York. Transmitted to the Legislature Feb. 17, 1896. For year 1895, and issued late in March last.

The volume presents in detail the reports upon systems of sewerage and sewage disposal in numerous villages of the State; investigations ordered by the Governor, with results of same; a complete report upon

the examination of foods, drugs and potable waters, by Dr. Willis G. Tucker, State Chemist; special reports upon investigations following complaints received from all parts of the State; inspections of polluted water supplies; abatement of nuisances, and bulletin of mortality for the year.

Several important facts are brought out and commented upon: *First.* The inspection of oysters: It had been proved that an epidemic of typhoid had been caused at Middletown, Conn., by the freshening of oysters at a point near the outlet of a sewer. A similar condition of "freshening waters" was found in this State, on Staten Island, and was immediately followed by the issuing of a general inhibition of the "floating" of oysters in creeks or streams. *Second.* Chemical work of the Board: Dr. Tucker states that the appropriation for this branch of work was far short of the amount needed; that frequent requests for bacteriological examinations of potable waters were received, but that none were made, as no facilities for such work were available; also that the Bender Hygienic Laboratory (recently completed) could be used for bacteriological researches by the State, and lives saved in many instances, if the necessary funds were forthcoming. *Third.* The investigation of tuberculosis: The board is fully alive to the fact that bovine tuberculosis has become a serious menace to the public health. The Legislature appointed a committee in the board to examine cattle, and to attempt to reduce the number afflicted, appropriating but $20,000 for the work It has been estimated that to destroy all cattle in the State so afflicted would cost $1,000,000. This condition is due to the fact that there is no quarantine against the importation of diseased cattle to the State, and the lack of funds to exterminate those confined to the State. It praises the efficacy of tuberculin as a diagnostic agent in bovine tuberculosis.

The entire work is interesting and valuable, and shows what has been done in the past by the board, and what immense good could be done in the future if it were unhampered and properly assisted by the Legislature.

H. S. P.

Current Medical Literature.

Banti's Disease.—In the *Gazetta degli Ospedali* E. Bonardi makes a clinical contribution to the knowledge of splenomegaly followed by cirrhosis of the liver (Banti's Disease). The disease runs through three stages: 1, pre-ascitic or anæmic ; 2, intermediary; 3, ascitic.

The first stage is characterized by a high degree of anæmia; the red globules decrease to 3,000,000. They are ill-formed and much smaller than normal. The hæmoglobin diminishes in proportion. The white discs do not exceed 10,000 and remain normal. The urine is normal. The spleen is much enlarged, hard, smooth, with round edges, and is painless. The liver is normal. This stage lasts from three to six months.

The second stage is characterized by symptoms of gastro-intestinal indigestion, diarrhœa, hæmorrhoids, and urinary changes. The urine is diminished in quantity, high-colored and rich in urates. This stage continues a few months.

The third stage begins with tumefaction of the abdomen from ascites. The liquid is transparent, straw-colored, of specific gravity from 1.010 to 1.012. The liver diminishes in size. No albumen, sugar or biliary pigment, or only a trace of the latter, is found in the urine, which seems diminished in quantity. The skin is gray (earthy); there are profound anæmia and some evening temperature. The anæmia increases steadily, death ensuing after seven or eight months at the latest, from the beginning of the third stage.

The disease differs pathologically from the hepatic cirrhosis of Laennec, in that in the latter there occurs enlargement of the veins of the parenchyma of the spleen, then a thickening of the capsule and of the trabeculæ, and finally an increase of the connective tissue. It is not constant and never pronounced. In splenomegaly the increase in connective tissue is most marked, while the veins are diminished in calibre.

Banti considers the disease of an infectious nature in spite of negative bacteriological findings. Out of ten cases he was able to examine but one bacteriologically. He supposes the infection to begin at first in the spleen, producing histological changes causing enlargement. Then toxines penetrate into the blood causing anæmia, then irritation of the liver tissue, whence the cirrhosis. He advises splenectomy. One case so treated and described in this paper collapsed an hour after operation. In several other cases the spleen was examined for bacteria but none were found. W. H. H.

The Primitive Morality and Atavism of Crime.—A Resumé of the First Part of *Progresso Morale* by Guglielmo Ferrero (*Archivio di Psichiatria*).

The author attempts to show that certain traits that he considers the basis of habitual crime are reversionary.

The subject is treated under six heads:

I. He shows that impulsiveness, inertia and physio-psychic excitability are constant characteristics of the uncivilized, and increase in direct proportion to the higher or lower state of savagery or barbarism in which the special tribes may be. These traits show themselves by their proneness to violence or mirth on very slight provocation, extreme indolence followed by outbursts of great physical or psychic excitement, the chase, wild, riotous dances, gambling.

II. Impulsiveness is not productive of moral ideas since, whether or no the conduct which is the result of its action be good or bad, it is always immoral, in that "it is a permanent revolt against any rule of conduct."

III. Impulsiveness can not co-exist with methodical work and self control.

Human activity may be classified as follows: beginning with the least methodical and that most methodical: (1) the chase, fishing, war; (2) agriculture: (3) trades practiced by one independent individual; (4) trades practiced under the surveillance of another, and according to rigorously fixed standards. Each succeeding one places the individual on a higher plane of civilization than that of the preceding. Witness the different development of the American negro, who has been forced to labor regularly, and that of his savage African brother.

IV. "His impulsiveness then is the basis of the primitive immorality of man, while self-control is the corner-stone of human morality. Impulsiveness is connected with physio-psychic inertia, with incapacity for regular and methodical labor, with the necessity for violent and irregular excitation of the body and mind; while habitual, regular and methodical labor diminishes impulsiveness, develops self-control, subjects body and mind to the discipline of less violent pleasures based on rhythmical movements or sensations."

The actual incapacity for work is alike in all races, different is only the potential capacity of adaptation in case of necessity. In the competition among races and peoples those that are absolutely incapable of regular and periodical labor are bound to perish.

V. This incapacity for work (horror of work) is very common among born criminals (42.3%), less, though also present, among occasional criminals (19.2%). It is an atavistic trait.

VI. It is the impulsiveness and lack of adaptability of the savage that under proper stimuli lead him to violence and crime.

It is the same thing that leads the atavistic being, who is unable to adapt himself to his surroundings (regular labor) or to restrain his faulty impulses, to homicide, robbery, theft to sustain life, just as the savage chooses war or the chase. The former are the equivalents of the latter. (Author's theory of atavism by equivalents.) W. H. H.

A Simple Method for the Detection of Lead in Organic Fluids. — In *The Lancet* (*January* 16, 1897), Dr. John Hill Abram reports three cases of lead poisoning, and records his experience with the method suggested by von Jaksch for the detection of lead, as follows: The method seemed so simple and so little known that I mistrusted it. I therefore proposed to Mr. Prosper Marsden that we should test the method thoroughly; this we have done, and can vouch for the accuracy and delicacy of the modified method we now adopt. A strip of pure magnesium is placed in the fluid to be examined. Ammonium oxalate in the proportion of about one gramme to 150 c. c. is added. If lead is present, it is deposited on the magnesium. A deposit is seen within half an hour, but we have usually left it twenty-four hours. The slip is then washed with distilled water and dried. Confirmatory tests: (1.) warm the slip with a crystal of iodine — yellow iodide proves lead — cadmium may be ignored; (2.) dissolve deposit in HNO_3, and apply usual tests. The magnesium can be used again after careful washing with acid and distilled water. The surface of the magnesium must be bright — free from oxide — when used. The delicacy of the method has been tested with aqueous solutions containing known quantities of lead, also with normal urine to which known quantities of lead have been added. In all cases a control experiment was performed to ensure the freedom of the materials from lead. Without going into details, I may say that we have been able to detect lead when present in the proportion of one part to 50,000, whether in simple aqueous solution or in urine.

Practical Therapeutics.

Hectic Fever.—The antipyretics, such as the salts of quinine and antipyrine, exert only a moderate influence over this condition. Salicylic acid, on the other hand, highly recommended by Jaccoud and Samuel Bernheim, it would seem has a direct action upon the bacterial toxines, the direct cause of the hectic fever in tuberculosis. Jaccoud recommends considerably elevated doses, 2 or 3 grammes, which are administered in cachets of 50 centigr. 3 to 4 hours before the onset of the temperature elevation. Omit a day and then recommence the dose at 2 grammes, to continue until the fever has been controlled. The drug may be rendered tolerable by giving with the cachets a glass of milk.

Bernheim prefers to administer salicylic acid subcutaneously. He injects a Pravaz syringeful of the following, once daily:

℞ Acid salicyl., 2 grammes.
Ether sulph., } āā 10 grammes.
Olei olivæ, }

Salicyclic acid may be associated with other antipyretic agents:

℞ Acid salicyl., 50 centigr.
Quiniæ sulph., } āā 10 centigr.
Antipyrin, }

M. et ft. in cachet No. 1. Sig: One or two a day.

Other remedies have been recommended, but neither their physiological action nor indications have been explained.

Following are some tentatives which have been made to combat hectic fever. Danziger lauds the salts of thalleine, which he administers in pills containing from 10 to 30 centigr. per day. Stels advises the use of the following cachets:

℞ Calcii hypophosphit. 2 grammes.
Strych. sulph., 30 centigr.
Acid arseniosi, 10 centigr.
Olma powder, q. s.

Make into 60 cachets. Two to six per day.

In cases of hectic fever, complicated by nocturnal sweats, Stark uses:

℞ Strych. sulph., 2 milligr.
Atrop. sulph., 5 milligr.
Acetanelid, 4 grammes.

Div. in cachet No. 12. Two to three a day.

When there exists no sweating, Stark suppresses the atropine and prescribes the following:

℞ Strych. sulph., .02 centigr.
Phenacetin, 8 grammes.
Caff. cit., 2 grammes.

Div. in cachet No. xii. Two to three a day.

Von Lekely finds a mixture of ergot and salicylate of sodium very satisfactory.—*Progrès Médical, January* 23, 1897. A. J. L.

Acute Perforative Appendicitis. — B. G. A. Moynihan reports a case in *The Lancet* (*December* 26, 1896), followed by septic peritonitis with abdominal section and recovery, and summarizes the treatment as follows: (1) Make an early diagnosis; (2) if at the end of, say twenty-four hours, the symptoms are not retrogressing, operate at once; (3) if the case is first seen when abscess has formed, do not be content with merely opening and draining the cavity, but, if possible, remove the appendix as well; and (4) if the case be not seen until an early diagnosis of perforation has been made, operate immediately, cleansing thoroughly, but avoiding, if possible, lavage of the peritoneum.

Cholelithiasis. — Dunin (*Gaz. Ckarska*) has had good results from the administration of iodide of potassium, five to ten grains, twice daily. In severe cases he gives alternately the iodide and Carlsbad salts.

Insect Bites. — Ottinger (*Münch. Med. Wochenschr.*) recommends the external application of ichthyol, either pure or as an ointment, with equal parts of lanoline.

Phagedænic Chancres. — Balser (*Monatshefte für pr. Dermatologie*) advises irrigation with warm (45°c.) 0.1 — 0.2% solutions of permanganate of potash. The irrigations should continue for two hours daily, and the chancres should be dressed antiseptically at other times.

Pruritus Cutaneus. — De Wannemaeker in the *Belgique Médicale*, has had good results from the administration of salophen in daily doses of a drachm. It was especially valuable in cases of a neurotic nature, in patients with diabetes, gout and urticaria, and also in eczema.

Toxin Treatment of Malignant Growths. — In Czerny's Clinic (*Heidelberg*) twenty-seven cases were treated, according to the method of Coley. Of these twenty-seven cases, ten were carcinomata, and seventeen sarcomata (seven round cells, three spindle cells, three lympho–, two angeo–, one osteo– and one melanosarcoma. The following results were obtained:

1. In carcinomata the results were completely valueless.
2. In sarcomata, only very exceptional cases showed any result.
3. This questionable advantage was equalized by the dangers of poisoning as well as by the increase of the tumors in other cases. (*XXV Congress d. Deutsch. Chirurg.*)

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Original Communications.

For the ANNALS.

HOW DOES MALARIA ENTER THE HUMAN BODY?

BY RUPERT NORTON, M. D.

No serious student can any longer question the fact that malaria is a disease caused by a definite organism, much of whose life history is accurately known. It is not worth while to discuss or waste any time on the idea that malaria is due to a "miasma," or some strange chemical influence acting on the body; for such views have been abundantly and sufficiently controverted by the discovery of an organism, living in the blood of human beings, which, after its entrance and cycle of development, gives rise to many of those symptoms so long vaguely known and understood under the name "malaria," a term that for many years has been used most carelessly, and has covered a multitude of sins, both on the part of the patient and doctor. The very name "malaria" was significant of the fact that the medical profession could not explain the disease. But now we have passed beyond that point, and have enough knowledge, due to the discoveries of Laveran, and the work which has as a necessity followed his leadership both in Europe and this country, to discuss the questions arising from the discovery of this organism with accuracy and with benefit to all interested in the subject. In this paper I shall not deal at all with the different types of malarial organisms, three of which have been so well characterized and differentiated, but shall treat malaria simply as a disease with a well-defined group of symptoms, without drawing any distinctions as to the actual variations seen in this disease when caused by one or other of the malarial parasites. For after all,

whether produced by the spring or autumn type of organism, it is fair to consider it as one and not two diseases, since these organisms all belong to the same species, if not class.

As to the life-history of the organism within the body (and here, once for all, let me say that when I use the word "body" I mean the human body, for I shall not at this time consider the existence of parasites, similar to those existing in mankind, in other animals, as the bird or frog) we have at the present time much information, which is absolutely accurate and needs but little further study. It is not worth while for me to take up and describe at length the cycle of development of this organism, since this has already been done in many monographs and articles appearing in a great variety of medical journals.

But there is one fact, about which we are as yet quite in the dark, in the history of this organism, and that is by what means does it enter the body. Much has been written on this question, but the only evidence at hand is rather of a negative than of a positive sort. There have been two main theories offered for the solution of this problem, but neither is satisfactory—one is the water-borne theory—the other the air-borne. Laveran, the discoverer of the malarial parasite, is an upholder of the water-borne idea, and naturally has had many followers, but the best evidence that can be furnished for this theory is not sufficient to withstand careful scientific analysis, and so we have been thrown back on the air-borne idea. Laveran attempted to support his theory from such evidence as the following: First, that in countries well known to be malarious, if the supply of drinking water was changed from that of a stagnant source to one of a fresh supply, the amount of disease among the inhabitants lessened materially; but he did not prove that the disease from which they suffered was malaria, nor has any such evidence been furnished since his discovery. Secondly, that boiled or sterilized drinking water prevented Europeans, when they went into malarious countries, from being attacked by malaria—for this idea also he has no satisfactory proof. Other evidence of a similar sort has been furnished by numerous observers, but it has all been overthrown, and does not stand careful scientific examination. In Italy, for instance, several physicians have carefully experimented with a number of patients by feeding them for long times and with

large quantities of water coming from marshes, where it was known that malaria was prevalent, and in a malignant form. But these experiments have all turned out negatively; in not a single instance, so far as known, did a patient develop malaria of any type from drinking such water.

The much-rehearsed tale of the ship "Argo" has been used by almost all the holders of the water-borne theory, but not one of them has been able to prove that the cases of illness which occurred on board this vessel were due to malaria, that is, the disease which we now know under this name. The water-borne theory has been widely upheld by practitioners throughout this country, but the majority of them have studied the problem but superficially, and numerous mistakes have crept in through the confounding of malaria and typhoid fever. From a careful study of the modern writings on this point by observers in different parts of the world, it is evident that the most critical students of malaria have given up the water-borne theory almost entirely, and have come more and more to believe in the air-borne.

This theory has also existed since the disovery of the parasite, and up to within a very few months had seemed to be the only solution of the puzzle. It did not eliminate the water-borne theory, for there were many observers who believed in both, but there was, and still is, one body of practitioners who believed in it alone. The main reasons for believing in this theory are furnished by those for not believing in the water-borne idea. Up to the present time observers generally have thought that most of the infectious diseases were caught, in one or the other way, that is, either through the air or through the water. What other method had we for explaining the diffusion and extent of such diseases? None, I believe. These are the only two common elements by which disease can be carried long distances and widely scattered, and what is more, we know, or we believe we know, that some disease are so distributed—it is only necessary to name influenza, cholera and typhoid; a number of other diseases could be mentioned, but I have taken only those of which we know the cause, in all, with greater or less certainty.*

* Diseases may, of course, be transmitted through the agency of foods, and through personal contact, but these are less common means than the other two, and it seems doubtful whether wide-spread epidemics are likely to be caused in either of these two ways.

But when we come to study malaria and its distribution more closely, we strike against certain stumbling blocks, which make the air-borne theory less tenable than appeared at first sight.

Although malaria is an infectious disease, it belongs to a class by itself, and is but very distantly allied to such organisms as the germs of typhoid fever, cholera, diphtheria and others, which belong in a group by themselves. The organism which causes malaria belongs to a species totally different from that embracing the other mentioned germs, and we as yet know no other disease, occurring in human beings, with which it can be allied, unless it be the amœbæ, which gives rise to the so-called "amœbic dysentery." This fact should make us hesitate before we draw any hasty conclusions as to its propagation, simply because it is one of the infectious diseases. That we are dealing with another species or type of organism, of which we know no other samples as giving rise to diseases among mankind, may make it necessary for us to alter all our views as to the development and growth of diseases. We know much of the life history of many of the other organisms, which cause some of the infectious diseases, as they exist outside the body, but of this part of the history of the malarial parasite we know nothing; on the other hand, we know far more about the growth and development of the malarial parasite within the body than we do of the more common bacteria.

Up to now the malarial parasite has not been discovered outside of the human body, and all attempts to grow it on artificial media, such as are used every day in our bacteriological laboratories, have failed. But nevertheless it must exist outside the body, and the question at once arises, Where? or, perhaps better, In what form? For we do know the general characteristics of the soil where malaria is most prevalent. By this I do not mean to imply that malaria exists "in" the soil; it may be that it survives "on" the soil, or on the surface of water, but these are all vague problems into which I do not mean to enter. The question is, granting its necessary existence outside the body, How does it make its entrance into the body, in other words, How does it infect the system?

Let us first consider why the air-borne theory is not sufficient to explain its admission into the body through inhalation. The

evidence against this is mainly furnished by studies of the conditions existing in different parts of Italy, where malaria is prevalent. We know that malaria is not carried out to sea by the winds, for there is abundant evidence to prove that those on ships, anchored possibly only a short distance from very malarious coasts, seldom or never suffer from malaria, so long as they remain on board. This condition, and others allied to it, has been explained on the ground that the malarial organisms are dispersed and scattered to too great an extent by the winds for infection to occur. But this explanation is nowise satisfactory. Again it has been shown that malaria does not rise high in the air, that is, that its vertical limit is short. Of two neighboring villages, situated close to an intensely malarious region, only one was infected by malaria—for the other one was built on a high, rocky precipice above the malarious land, while in the case of the other the ground rose only gradually to its site. Why, again, if due to the winds, are persons asleep more easily affected than those awake, and again, those sleeping at night more than those in the daytime? Why those living close to the soil, more than those elevated by a few feet? Why should malaria also be more prevalent immediately after the rainy season, when the grounds are well soaked, and when the elevation of any dust or organism transferable by air must be rendered far more difficult than when the soil is dry? It is difficult, almost impossible, to explain these facts on the idea that the air is alone the important factor in carrying the infection. And it is such difficulties as these which have engendered a new and startling, though very ingenious and interesting theory. Before, however, I take this up I would add that all experiments which have been tried to produce malaria in patients not suffering with it by insufflation of dried blood of patients having the disease in one form or another, or by ingestion of such blood, have signally failed; which only furnishes further proof that malaria does not in all probability infect the system through the lungs or stomach.

It was first suggested by Manson, I believe, that the mosquito might be the host, by whose aid malaria was admitted into the human system. He sets forth his view in several articles on malaria, which appeared in the London *Lancet* for 1896. In these three papers, which are too long to discuss here in detail,

but which are well worth careful reading, he expounds his new theory very fully. Some years past he showed the presence of the "*filaria sanguinis hominis*" in mosquitoes, and he draws a very close analogy between the existence of this parasite in man, and in its extra-corporeal host, and the life history of the malarial organism, and also draws certain conclusions from the anatomy of these two parasites. His ideas, however, are based largely on the existence of one form of development of the malarial parasite, the well-known "flagellate" bodies; these are common in both the tertian and æstivo-autumnal types of malarial fevers, but uncommon in the quartan variety. But, as the quartan cases seem to be excessively rare in all countries, his view does not seem to me to be much affected by this fact. These flagellates Manson believes to be derived from the so-called "crescents," which bodies, however, are only found in the æstivo-autumnal type of fever; and he does not explain from what forms in the tertian or quartan type of fever the flagellate bodies are derivatives. The most important factor, however, in this question, is whether the flagellate body is a step forwards or backwards in the cycle of development, that is, whether it represents a form through which the organism completes its real life history and is essential in its development, or whether it is simply a degenerative form, and of no consequence in the propagation of the organism. This is a question on which the profounder students of malaria do not agree, at present, though it would seem as though the theory that the flagellate body was a degenerative form was the more probable one. Much stress has been laid on the idea that these flagellate bodies develop only extra-corporeally, since on examination of blood of malarial patients they have not been usually found at once on withdrawal of the blood, but have apparently developed only after a period of seven to fifteen minutes. Whatever value such a fact can have in the explanation of these bodies is as yet in doubt, but it is still questionable whether they may not exist actually in the circulating blood. The following case,* observed by me, seems to prove that the flagellate bodies may be seen almost immediately

* The patient was seen at the Emergency Hospital, in Washington, D. C., in the service of Dr. G. B. Harrison, whom I desire to here thank for his kind permission in allowing me to make use of these notes.

after obtaining the blood from the patient; at any rate within less than two minutes at the outside. The patient was a colored man, 28 years old, who came to the dispensary complaining of chills. An examination made of his blood, as he sat close by the table on which the microscope stood, showed an immense number of æstivo-autumnal organisms, mainly crescents and flagellate bodies. The crescents averaged three or four in a field, and in one field nine were counted; as many as five flagellate organisms were also seen in one field, and in every field, one, two or three. As but a moment was lost in taking the blood, and examining it under the microscope, it is evident that the development of these flagellate bodies must have been extremely rapid, if it occurred after withdrawal of the blood; and from what preëxisting form of malarial organism they developed is quite uncertain, since there were no signs of involution forms between the crescents and the fully formed flagellate bodies. It was noticed, also, that there were very few ring-like bodies to be seen in the preparation. The patient's temperature was normal when he was examined. He was seen again the following day, when the condition of the blood seemed about the same, though the number of organisms was somewhat smaller. We will not, however, enter further into this problem of the intra- or extra-corporeal development of these bodies, and have only brought forward this case to show the possibility of very much more rapid evolution of the flagellate bodies than is generally surmised. Whether it be through them or through some other form of the malarial parasite that the life history is carried on in the mosquito is a question needing much more study than has yet been given to it. Ross states that he has found crescents in the blood of mosquitoes and also flagellate bodies, the latter in greater numbers than the former; from this fact he believes that the crescents develop into this other form, since the patient, on whom the mosquito fed, had more crescents than flagellates in his blood. Such observations require much more evidence to be convincing, and as yet the origin of the flagellates must be still considered unsettled.

One of the reasons why Manson, Ross and others devote so much attention to these flagellate bodies as carrying on the extra-corporeal life of the malarial parasite is that they are the

only form of the organism common to all the three types of malarial fevers, tertian, æstivo-autumnal and quartan. The other forms show distinct variations in the three fevers, but under the microscope the flagellates show but very slight differences—those of the tertian fever being possibly a little larger than similar bodies seen in the other two types. The color of the pigment in each form varies slightly, but this is characteristic of the three types of parasite, the product of each one being a pigment of a shade lighter or darker than the other two.

After this theory had been propounded by Manson, Bignami came out with two papers,* in which he supplied further evidence to support it. Bignami is one of the ablest students of the subject of malaria, and any theory supported by his authority deserves much consideration. He lays great weight on the similarity of malaria and Texas cattle fever, which, as has been shown by Theobald Smith, is due to bites of the tick, in which insect the organism causing this fever is supposed to pass through certain stages of its existence. Smith has proved absolutely that the tick is necessary for the existence and transmittance of this fever, and yet the organism whose form, as it exists in the cattle, are perfectly well known, has never been found in any known form within the body of the tick. Could this be done the cycle of development in the life history of the organism would then be completed. So although we have not as yet been able to find the form of malarial parasite by which we can be at all certain that its extra-corporeal life is carried on, this is no sufficient ground for throwing the theory of the mosquito over. Bignami shows that the very methods of living among the people in malarious districts tends to support this theory. They attempt, so far as possible, to make their houses impenetrable to all diptera, some having no windows, but merely an opening in a conical roof, by which smoke may escape and cause a continual upward current. At night windows and doors are all carefully closed and rendered impenetrable to the entrance of insects. Nets are also used to cover the people while sleeping; and when out of doors they do their best to keep their bodies covered as far as possible so as to avoid being stung. One student of the subject maintains that if he could completely cover

*See translation in London "*Lancet*," Nov. 14th and 21st, 1896.

his body he would never catch malaria, even under the most favorable circumstances. Other diseases are supposed to be due to the bite of insects, of which elephantiasis is an example; there is nothing to prove that this disease may not be so induced; and within a couple of years a case of syphilis has been reported, where the evidence seemed to prove inoculation through the bite of a flea* As against this new theory, there is the almost unquestionable fact that malaria exists where there are no mosquitoes, but in such places the host of the malarial parasite may be some other biting insect. The fact that malaria does not apparently rise high from the ground can also be explained by this theory, since mosquitoes in their brooding places usually are found close to the ground. High elevations are not spared by the mosquito, as people dwelling in the upper stories of tall hotels well know; but they are usually found here in less numbers than nearer the ground.

The blood of many birds and frogs shows organisms of a type very similar to that found producing malaria in human beings, and it may be possible by further studies on these animals to obtain information on the point at issue.

Ross says he gave rise to malaria in one patient by feeding him on "mosquito water," or water in which malarialized mosquitoes had died after depositing their eggs in it. Eleven days after drinking such water the patient had a chill, with rise of temperature. No organisms were found in his blood, and this sudden attack passed off as rapidly as it came on, and he had no further recurrence of the trouble. Ross failed to produce any symptoms with this water in a number of other patients he experimented upon, so that his one favorable (?) case may be fairly considered very doubtful. Bignami also experimented on one healthy man by confining him through a night in a room in which a large number of mosquitoes, caught over a malarious tract, were freed. The patient did not develop malaria. As Bignami says, such an experiment proves little one way or the other, because of the manifold difficulties in carrying it out successfully—one night is not sufficient, since the mosquitoes disperse very rapidly later.

* J. Hutchinson's "Archives of Surgery," Vol. VI, p. 387, London, 1895. Other cases have been reported by Diday, Lailler and Fournier where syphilis was apparently traced to the acarus as the true agent of transmission.

It seems a not unreasonable theory to believe that malaria might be contracted through the agency of one, or even more than one, form of diptera. But if due to the mosquito, this diptera will be fairly hated more than ever, and all the good ascribed to it as a scavenger will hardly be balanced by the evil done by it. It is a well-established fact that only the female mosquito stings, and in this case the solution of the puzzle of the existence of the malarial parasite only in the body of the female would explain its simple transference to human beings. But it is a complicated problem, since it makes the malarial organism a parasite of two bodies; the one the mosquito either being necessary to its existence, or simply acting as a transferring agent; the other the human being, not actually necessary to its life, since malaria exists in places where people do not live; *i. e.*, travelers in a new country often suffer from malaria, and since they do not bring the malaria with them, never having had it before, the parasite must exist in that country previous to the traveler's arrival, and must exist in a very active and flourishing condition.

Bignami says: "One might imagine the course of events to be something as follows: The mosquito, as is well known, deposits its eggs in water or in damp places; from the eggs are hatched larvæ, which, very voracious, devour everything they encounter, among other things the bodies of the dead mosquitoes, and the envelopes from which they have emerged. They then pass into the state of nymphæ, from which emerge the young mosquitoes. During this long period of life in damp soil or in water, and especially in the state of larvæ, one may imagine that they load themselves with malarial germs, which everything leads us to believe are found most abundantly in the soil, and which afterwards in the last period of life, when the female mosquitoes live as suctorial insects, might inoculate man. This hypothesis would naturally give rise to other problems. The malarial germs having entered into the young larvæ might live in them as parasites, going through a necessary stage of their life in this host before arriving at man. On the other hand, one might suppose these diptera to be simply carriers of the germ into man." In the case of the Texas cattle fever, Theobald Smith came to the conclusion that the ticks simply acted as car-

riers of the organism which infected the cattle, and did not act as a true intermediate host necessary in the cycle of development of the organism. What is true of this cattle fever would seem to be more likely to occur in malaria, that is, that the mosquito is simply a carrier of the malarial parasite from the ground to the individual. The other problem that the malarial organism is a true parasite of the mosquito as well as of man, complicates the processes of nature very greatly. Why the female mosquito should alone be the host is inexplicable, unless so arranged purposely that man may be infected therewith, and yet if both male and female mosquitoes act as bearers of this parasite, then all those that are carried by the male mosquito must come to nought, for the male does not attack human beings. Such are some of the problems yet waiting for elucidation in the origin of malaria.

1234 14TH STREET, N. W., WASHINGTON, D. C.

THE NICOTINE HABIT AND LIFE INSURANCE.*

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It would seem on first thought that this subject were scarcely worthy of a running or lengthy commentary, but I will attempt to prove the contrary.

Tobaccoism is essentially a habit, no matter in what form or to what degree the drug is used, and should be considered as such in every clinical history, or in the history of every applicant for life insurance where it presents itself. The inveterate users of tobacco will not gainsay this; but the self-called occasional or moderate consumers will doubt it, or even assert, perhaps, that the view is an extreme one. And in this connection it is but fair to say that views concerning its use are extreme rather than the opposite among both consumers and non-consumers.

It cannot be said that tobacco is harmless, neither is it true that it is wholly without good effects. Used in excess, it is a poison; in moderatian, a solace and oft-times a blessing. That its use, in no matter how small a degree, constitutes a habit is shown by the fact that the man who limits himself to one cigar

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*Read before the Albany County Medical Society, April 7, 1897.

daily, and that as an after-dinner comfort, when deprived of it, craves it and is wretched. Whether the craving be physical or mental it matters not—it is there.

Human nature is prone to excess, and it is exceptional to find the man who can carry along a drug habit within moderate limits. He does not possess the will power—did he, he would not have the habit. Therein lies the evil of every drug-taking practice, no matter what the drug may be. I desire to avoid narrowness in my views, and agree heartily with Kerr: that tobacco brings much peace of mind and body after severe fatigues, and that the after-dinner pipe or cigar makes a man "pleased with himself and the whole world beside." Here, however, its usefuluess as a luxury must end. Concerning its usefulness as a therapeutic agent is quite another matter. In this field its use has declined rapidly in later years, it having been superseded by better and more agreeable drugs.

It is rare to find a father who smokes that does not admonish his son to avoid the use of tobacco in any form, and it is still less common to find a consumer who will not say that it injures him in some way. And however successful he may be in convincing others that the habit is a harmless one, he cannot bring himself to the same conviction, no matter how much he may court self-delusion.

"*Tabacum*," or tobacco, is the commercial dried leaf of "*nicotiana tabacum*" and contains to the proportion of five per cent. the powerful alkaloid "nicotine," in addition to the mineral constituents, potash, lime, nitrates and phosphates. From one to three drops of the pure alkaloid nicotine, or thirty grains of the dried leaf, are considered lethal doses; the first form killing in from three to five minutes; the second, in half an hour.

Here is a drug whose active principle equals prussic acid in its intensity and quickness of action; yet it is used universally and with impunity as a luxury. And stranger still, it is seldom that it adds directly to our death list, and it has not been known to be the direct means of adding one pathological specimen to our collections. Cases of acute poisoning are on record. In one case, reported by Taylor, death occurred in three minutes; in another, in five minutes. In these cases death was due to interference with the pulmonary functions; asphyxia, caused by the

arrest of oxygenation of blood in the lungs. But cases of chronic tobaccoism are by no means rare; and it is not necessary to go to the case-book of the general practitioner to find them; the field of life-insurance examinations is as prolific of them as the clinic or the hospital ward. Yet the condition is seldom the single cause of rejection in the one or of active treatment in the other.

The total annual consumption of the leaf in 1821 was 15,598,-152 pounds; in 1881, 49,820,493 pounds, or per head in 1821, 11.71 ounces; in 1881, 22.60 ounces. So, in sixty years, the annual consumption has increased about thirty million pounds, or more than tripled; and the amount consumed per head has doubled. Though these figures are interesting, it is impossible to apply them in any but a general way, because it would be difficult to make even a vague estimate of the number of the world's inhabitants to whom the use of the drug is confined. To arrive at conclusions by synthesis is more satisfactory. We will take the daily allowance of tobacco given the private in the United States regular army, or half an ounce (℥ ss.). As stated, the weed averages five per cent. nicotine. Kissling has proven that over fifty per cent. of this nicotine passes into the smoke, also that the only other substances found in appreciable quantities were the lower members of the picoline series. Therefore, half an ounce (℥ ss.) of tobacco will yield six grains (gr. vi.) of nicotine in the smoke. Just how much of this would be absorbed by the mucous membranes is not known. It is reasonable to assume, however, that the greatest quantity would be absorbed when the tobacco is chewed or smoked in the form of a cigar, or when the smoke from a cigarette is inhaled into the lungs. The quantity absorbed must be very small, indeed, yet always sufficient to produce physiological effects.

It is impossible, with tobacco, to estimate the precise degree of harm done by its use; with alcohol, opium, cocaine, etc., it is quite the opposite. They are in one class to the extent that they are all poisonous drugs, but no weighty comparison can be drawn between the demoralizing effects of tobacco and the other three when used by habitués. Burton, in his "Anatomy of Melancholy," gives the following strong and humorous expression of the views of his time: "Tobacco, divine, rare, superexcellent tobacco, which goes far beyond all the panaceas,

potable gold and philosopher's stones, is a sovereign remedy in all diseases. A good vomit, I confess; a virtuous herb, if it be well qualified, opportunely taken and medicinally used; but, as it is commonly abused by most men, which take it as tinkers do ale, 'tis a plague, a mischief, a violent purge of goods, lands, health,—hellish, devilish and damned tobacco, the ruin and overthrow of body and soul." Hogarthian, to say the least.

Persira says: "I am not acquainted with any well-ascertained ill effects resulting from the habitual practice of smoking." E. A. Parks, in the following, expresses the general and most modern view of the subject: "I confess myself quite uncertain. I can find nothing like good evidence in books; too often a foregone conclusion, without any evidence to back it, is given. I think we must decidedly admit injury from excess; from moderate use I can see no harm, except it may be, in youth."

The difficulty is to distinguish between moderation and excess—no hard-and-fast rule can be followed; each case must be isolated from all others and considered according to the temperament, idiosyncrasies, surrounding conditions and mode of life of the subject in hand. In a great many instances the smoker is a consumer of alcoholic beverages also, not necessarily to excess, but it does not take him long to learn that a glass of whiskey will counteract the effects of a strong cigar. Excess in one habit is likely to accompany excess in the other, though excessive drinkers are more apt to become excessive smokers than *vice versa*. But, according to Kerr, the influence of association and social custom conduce to both practices, that one habit of itself does not, apart from association, lead to the other. He also says that tobacco is a potent poison, debilitating the system, stunting growth and depraving functions.

The smoker becomes a student of his sensations from his first pipe or cigar—he never forgets the depression, the faintness and nausea, the cold, clammy perspiration and creepy feeling following the initial smoke. Later in his career he is reminded of the fact that he is smoking too much by sudden awakenings from sleep, with violent palpitations of the heart, and realizes that he has "smoker's heart;" or he finds that he cannot sleep well because of excessive nervousness; or that, upon stopping, he cannot work, because of extreme "nervous unrest," the absence of the soothing smoke makes him miserable; or that his diges-

tion frequently torments him; or more rarely, that his eyesight is troubling him, and his oculist imperatively forbids a continuation of the practice.

It is an interesting and a profitable study to scan the instructions of the different life insurance companies to their medical examiners in relation to this habit. Out of thirty of the most important companies in the central, northern and eastern States, six issue no instructions to their examiners, but rely wholly upon the physician's knowledge of what should constitute a good risk, and hold that "all necessary inquiries will occur to him," if he be properly qualified. All the other companies, however, give instructions, more or less explicit, and it is noticeable that the larger companies—those on the most firm financial basis and doing the largest business—all give instructions touching the tobacco habit, and some go so far as to reject for excessive use of the drug. On the other hand, five of the smaller companies wholly ignore the tobacco clause. One company, most exhaustive in its instructions, dwelling at length on stimulants and narcotics, does not require uranalysis in cases where the application is for a sum less than $5,000. To me this seems inconsistent—clauses very nearly equal in importance are very unequally balanced.

Of the drugs considered by these institutions in relation to their excessive use, alcohol, tobacco and opium stand at the head, and by most companies, in the order named in relative importance. Of these three, alcohol furnishes by far the greatest number of rejections; opium seldom one, because the opium or morphine-eater is almost never an applicant for insurance; and, as previously stated, tobacco alone is rarely, indeed, a cause for rejection. That it is a very important factor for consideration in each case, however, is shown by the status given it in the instructions of painstaking and successful companies. And, to quote the precise language used by some of them. One says: "Many forms of chronic disease take their origin in the excessive use of alcoholic liquors and tobacco."

Another says: "The habits, past and present, of the applicant as to the use of alcoholics, tobacco and opium should be determined. Their frequent use should direct attention to the stomach, liver, kidneys and nervous system."

Another: "Under no circumstances should an applicant be recommended when any of the following conditions exist: intemperance and use of narcotics habitually, or excessive use of tobacco."

From the foregoing it is not difficult to see the stress laid upon the effects of the nicotine habit or to draw some pertinent conclusions:

I. Tobacco, as a drug, considered clinically and in relation to life insurance, is a potent poison, and when habitually used in any form has a deleterious effect upon the functional activity of every organ of the economy.

II. That it is, however, the least harmful of the three drugs, alcohol, tobacco and opium; this trio being usually considered under one head in insurance work—that of drug habits.

III. Rarely is rejection recommended because of the excessive use of tobacco alone. Postponements are the rule, and even they are rare.

IV. It receives its most important consideration when the subject combines its excessive use with other excesses—when, for instance, he is of a nervous temperament, living at a high nervous tension, smoking constantly, drinking more or less for stimulation, eating and working rapidly, sleeping badly; or under the opposite conditions, when the subject is phlegmatic in temperament, leading a sedentary life, over-eating and adding wine to his cuisine, smoking heavy cigars, exercising little; an excellent candidate for atheroma. Subjects presenting one of these two conditions are occasionally found.

In closing, I desire to say that I have only been able to review the subject from the standpoint of a medical practitioner, having come in contact with many cases in clinical, private and insurance work, and without statistics as a basis; and to add for the benefit of future observers the following clause from the instructions of an insurance company of high standing: "The regular or occasional use of intoxicating liquors, tobacco or narcotics needs special investigation, as experience has proved that habits of drinking and the use of narcotic agents have more influence in determining the probability of an individual attaining average longevity than any other factor in the problem of life insurance."

1 SOUTH HAWK STREET.

Editorials.

Chloroform and Ether.

The *British Medical Journal,* in an editorial upon "Chloroform and the Heart," takes the position that ether is much less dangerous than chloroform as an anæsthetic. It concludes this editorial by the sentence "As to the physiological action of chloroform and to the comparative safety of ether recent experiments on animals are, we are glad to see, in complete accord with clinical experience." This is based upon the recent article of Hill, who contradicts the conclusions of the Hyderabad Commission, that death is due to the failure of respiration; that cardiac failure is secondary, and is a matter of no importance, as it never occurs during ordinary anæsthetization with chloroform.

Hill claims that chloroform produces a primary failure of the circulating mechanism, while the failure of the respiratory center is secondary. Chloroform, by paralyzing the splanchnic vasomotor tone and by weakening the action of the respiratory pumps rapidly abolishes the vascular mechanisms which compensate for the hydrostatic effect of gravity. It also produces paralytic dilatation of the heart. Syncope most commonly (in one year thirty-nine out of forty-one recorded deaths) occurs in the primary stage of anæsthesia by chloroform, due to paralytic dilatation of the heart. As it is impossible to diagnosticate this condition, all cases of chloroform syncope should be treated as if it existed.

Recovery can be brought about by a simple procedure. At the moment of syncope the patient must be placed in the horizontal position and artificial respiration applied. The chest must be rhythmically compressed by placing the hands on each side of the thorax, so that the heart may share in the compression, and the circulation be maintained to a certain extent. If this does not quickly restore pulse and respiration, the patient should be turned into the vertical feet-down position. By this means the dilated right heart will be emptied into the abdominal veins. At the same time artificial respiration must be maintained. After a few seconds the patient should be returned to the horizontal position, and the right heart will thus be refilled with a fresh

supply of venous blood. This must be repeated if the first attempt does not prove successful. Success depends upon the promptness with which the syncope is recognized. Either inversion or compression of the abdomen are fatal mistakes in this condition. He agrees with Ringer's experiments on the heart, that ether is fifty times less dangerous than chloroform.

Therapeutic Uses of Spermin.

Hirsch, in the *St Petersburger Medicinische Wochenschrift* (February 15, 1897), contributes to this branch of organotherapy, basing his observations upon the discovery by Poehl, that spermin is an element in all of the organs which have been used as remedial agents. Spermin plays the part of a physiological and chemical ferment of the oxidation processes in the tissues, and is thus a strong weapon against the accumulation of waste products, hindering or preventing auto-intoxication. Its effects are revealed in a number of marked changes in the urine, indicating great activity of oxidation in the organism. It is known, for instance, that the leucocytosis due to the use of iron and arsenic in anæmia follows leucolysis, or destruction of the white corpuscles, and is accompanied by an active production of spermin, to the presence of which the beneficial effects of the iron and arsenic are attributable. This only occurs in blood of normal alkalescence, for the spermin in blood of reduced alkalescence is reduced to inactive spermin phosphate, or Charcot-Leyden crystals. By virtue of its general action, spermin has no specific application in a limited class of diseases, but is serviceable in a variety of conditions in which there is need of promoting the excretion of harmful products of metabolism. If the tissue changes be increased by the exhibition of spermin, the waste products which act injuriously upon the nervous system are brought into looser combination, enter the circulation, and are expelled. Poehl noticed in epileptics that the attacks follow immediately after the maximum retention of leucomaines in the organism, that is, when the minimum amount was discoverable in the urine. Hirsch's cases covered such widely different diseases as anæmia, locomotor ataxia and endarteritis obliterans, in all of which the administration of twenty-drop doses, twice daily, of the alcoholic preparation of spermin (Poehl) was

followed by very pronounced results. His observations were corroborated by the experience of Senator, Benedict, Hofmeier, Eulenburg, Ewald, Fürbringer and Mendel. From their results, in connection with his own, he reaches the conclusion that spermin has no specific action upon particular diseases, but appears to be a physiological and chemical agent, which regulates intraorganic oxidation, promotes the excretion of waste products harmful to the nervous system, has no injurious effects, and assist most materially the *vis medicatrix naturæ*.

Serum Treatment of Tuberculosis.

The Seventh Italian Congress for Internal Medicine considered the treatment of tuberculosis by the serum of Maragliano. The results reported were exceedingly favorable, and the consensus of opinion was strongly in favor of further experimentation. One speaker claimed that it was well borne by the patients, and had no bad effect upon the heart or blood vessels; that it diminished the fever, improved the general condition, and in almost all cases increased the weight; that it had a specific effect upon the tuberculosis, but that it must be employed for a long time. Maragliano, in the discussion, stated that five hundred cases had been treated by this serum. He did not believe that his serum would cure all clinical forms of tuberculosis, and he had always spoken of a temporary and never of an absolute cure. The serum had exerted a most favorable effect upon the fever, the nutrition, the local lesions and the bacilli in the expectoration. He had demonstrated that the effect of the serum was a specific one, as in both men and animals the serum neutralized the toxic action of tuberculin in the same manner as antitoxin neutralized the toxin of diphtheria.

The serum of Maragliano is obtained from the blood of asses, who naturally immuned, are rendered much more highly immune by treatment. It is thus the natural antidote to the poison of tuberculosis in contradistinction to Koch's tuberculin, which is the poison itself in an attenuated form, and acts by inducing an acute inflammatory process. The marvellous results obtained from the use of diphtheritic antitoxin would seem to indicate that this is the way for therapeutic advancement in this scourge of mankind.

Scientific Review.

The Treatment of Gout (Arthritis Urica) — Dr. F. Levison discussed this subject in the *St. Petersburger Medicinische Wochenschrift, Nos. 1 and 2, 1897.* The writer believes that gout, of which the most important symptom is the occurrence of biurate of soda in the body, is caused through retention of uric acid in the blood, when the kidneys are unable, for a greater or less time, to eliminate the whole quantity of the uric acid formed in the body. If the uric acid is compelled to remain for a longer time in the body, it forms, as Roberts has shown, the with difficulty soluble biurate, which is deposited in the joints and elsewhere. The uric acid retention depends always upon a diseased condition of the kidneys. So long as these are healthy, a great amount of uric acid is easily eliminated, just as is observed at the conclusion of pneumonia, for months and years in leukæmia, and as Elstein and Nicolaier have recently shown by experiment. The disproportion between the amount of uric acid lodged in the body and the part of it obtained by separation is not, however, constant; it may be so increased that suddenly an abnormally large amount of uric acid may be formed, or so that the kidneys functionate very poorly. On the other hand, there may be a period during which the diseased kidneys are again more capable of carrying it, and the deposited biurate concrements are again taken up and eliminated. If a nominal amount of uric acid is retained for a long time, there is produced the chronic, lingering form of gout, which takes its course without acute attacks.

As all autopsies upon gouty patients show, in arthritis the kidneys are in a condition of granular atrophy, and this kidney disease predisposes to retention of uric acid and to the development of arthritic processes. In this connection it must be remembered that kidney conditions are found which show, on rough examination, a condition vastly similar to the peculiar granular atrophy, such as occur especially in the syphilitic granular kidneys, but whose finer anatomical changes upon closer scrutiny show an entirely different pathological development from the genuine granular atrophy, and that causing also no retention of uric acid.

Granular atrophy may occur in the following ways:

1. There is an hereditary form, that develops mostly in childhood, or in early age, and for which we know no cause, except heredity.

2. It may occur through poisoning, of which the most accurately known form is that following lead poisoning.

3. From mechanical irritation, following by far most frequently the deposit of uric acid crystals and small concretions, which have been found in the smaller tubes. The prime cause here is an anomaly of tissue metabolism, which causes a change in the chemical constitution of the urine, and in this way a deposit of uric acid.

From this view of gout as a sequela of kidney disease, it is possible to formulate a rational therapy.

A. Prophylaxis: First, to prevent the development of the disease; secondly, after the first attack, to prevent other attacks by regulation of the diet. In anticipating the disease, treatment is to be directed to the customary means for prevention of the granular condition of the kidney. When this follows chronic lead poisoning, hygienic rules, ventilation, cleanliness, etc., must be adopted, and the introduction of lead into the system must be prevented.

For the third and most frequent form of granular atrophy, when this follows the injury to the kidney caused by uric acid crystals, prophylaxis depends upon so changing the chemical constitution of the urine that the uric acid remains in solution, and that concretions in the kidney, if any exist, may be broken up or dissolved. In consequence of the generally accepted theory that uric acid is an oxidative product of albuminates, the amount of animal food has been reduced as much as possible; some authors even have advised a vegetable diet. Numerous and carefully conducted experiments upon the products of waste have shown, however, that the uric acid excretion has almost nothing to do with the amount of albuminates contained in the food; the same person excretes about the same amount of uric acid during meat diet, mixed diet, or purely vegetable diet. All substances irritating to the kidneys must be avoided. As it has been established by the researches of Kossel, Horbazewski, and

many other authors, that the production of uric acid may be greatly increased by the use of thymus gland, or of pure nuclein, the administration of glands and tissues rich in nuclein, as thymus, liver, kidney, pancreas, etc., is to be avoided.

The yolk of egg has also been suspected; but since Kossel has found that the paranuclein of the yolk is not, as nuclein, transformed into uric acid or xanthin bases, the moderate use of eggs is permitted.

All writers agree in forbidding the use of alcohol. Coffee also appears to increase the production of uric acid.

The urine is to be diluted by the ingestion of an abundance of liquid, preferably boiled water or milk; mineral acids are not to be taken; vegetable acids, and especially those converted into carbonates in the blood, may be drunk without danger. The plan is to render the urine capable of dissolving the uric acid, and not, as has been so often done, to reach a high degree of alkalinity. The danger from too great alkalinity is, first, the precipitation of phosphates, which may increase concretions of uric acid already begun; and secondly, to bring on in patients, whose kidneys have already been injured and a precipitation of uric acid has already begun, an acute attack of gout, by introducing too great a quantity of sodium salts into the blood and tissues.

If the reaction of the morning urine is only lightly acid, and if with the centrifugalizer no uric acid crystals can be found, all is attained which is to be expected from the use of alkalies, whether sodium bicarbonate, Vichy, or any other alkaline spring water has been given. Calcium carbonate does not enter the urine, but unites with phosphoric acid in the intestine, and is contained in the fœces as calcium phosphate. As the urine is thus deprived of phosphoric acid, sodium biphosphate is more abundant, sodium phosphate is more scant, and, as the urine remains acid, the uric acid is retained in solution.

B. For the relief of pain in the acute attacks of gout, colchicum has given best results in the experience of the writer. If the attacks were prolonged, or several attacks followed one another in rapid succession, without being relieved by the colchicum, salicylic acid often was followed by prompt improvement.

C. The treatment of the rigidity and deformities which follow

acute attacks of gout, or develop slowly, but to high degree, during chronic gout, is the special theme of the writer. He enumerates the various methods of treatment hitherto recommended — massage, iodine, actual cautery, the hot sand baths of Grawitz, and the treatment at various spas. Of the new chemical preparations, such as piperazin, lysidin, lycetol, and others, he believes there will be but a short-lived popularity.

Electricity has been used for a long time in the treatment of gout and rheumatism, and the results have been variously given, some authors preferring the constant, others the induced current. At the International Medical Congress in 1890, Edison reported upon the "Use of Electrical Endosmosis in the Treatment of Gouty Deposits." Edison's communication included a report upon various experiments. A glass tube of large calibre was closed at one end with a sheep's bladder, which made a diaphragm of about 44 square cm.; the tube was filled with lightly acidified water, and the closed end immersed about 1 cm. into a 2.5 per cent. solution of lithium, in which also the positive pole (platinum) of an electric battery was placed. After a current of 150 ma. had been passed through for 75 minutes, chemical analysis of the contents of the tube showed so much lithium that, by saturation with phosphoric acid, 0.5 grm. of lithium phosphate was determined; by simple endosmosis, in the same time only enough lithium passed through the membrane to produce 0.3 grm. of lithium phosphate.

A twenty-year-old, healthy man held his right hand in a two per cent. solution of lithium chloride, while the left hand was immersed in a weak solution of sodium chloride; the positive pole of an electric battery was placed in the lithium solution; the negative pole in the sodium chloride solution. A current of about 4 ma. was passed for about two hours a day, and this treatment continued for six days, or eleven hours. During this time the urine of the person under experiment was collected, and the lithium of the urine, estimated as the quantity needed for chloride of lithium, gave an amount equal to 0.55 grm.

Finally Edison proved the therapeutic value of the method by similar treatment of a gouty hand, with the result that the pains, as well as the swelling of the hand and fingers, were diminished.

The writer cites various other interesting experiments, which

all go to show that it is possible, with the help of the constant current, to pass lithium through the healthy skin, and that this procedure may be concentrated upon a particular part of the body. Although the amount of lithium thus absorbed is small, yet when compared with the local effect of the usual internal dose, it will be seen to be more effective. By the electrical method the lithium is also used in *statu nascente*, and is therefore much more competent to influence the solution of the sodium biurate.

In September, 1895, Levison procured a constant battery that was in condition to give daily, for several hours, a current of 20-30 mille ampères, comprising 48 large Leclanché elements. Each séance lasted 30 minutes. The positive pole of the battery was connected with a carbon electrode that was immersed in a two per cent. solution of lithium chloride, made alkaline with lithium carbonate; the negative carbon (*sic*) electrode was placed in a very weak sodium chloride solution. The part of the body to be treated was placed in the lithium solution, and an indifferent part (hand or foot) in the weak sodium chloride solution; the usual current was 20-30 ma.; in some cases not more than 10 ma. could be borne.

Summarizing 15 cases which were treated in this way, Levison found that 10 were distinctly benefited, and in five the improvement was slight or nil. In the latter group was one in which there had been an error in diagnosis; in three the course of treatment was interrupted by complicating diseases, and in the remaining patient a distinct impression was made upon the joint disease, although a nervous condition remained unchanged. The ten successful cases became distinctly better, although at the beginning of the treatment there appeared very slight chances for improvement. In one of the successful cases the beginning of the disease dated back about fifty years. In many cases there were long-standing anchyloses of the joints and atrophy of the muscles and bones, which were not influenced by treatment, but in others, joints that had been for a long time stiff and useless became gradually movable and serviceable. A very noticeable effect of the treatment was the diminution or cessation of the spontaneous pains, which often occurred quite suddenly, after five or six séances. Although not more than a year has passed

since Levison's treatment was begun, and it is too early to announce the duration of the favorable result, yet no patient has relapsed into the previous condition; relapses have occurred, but have easily responded to treatment after a few séances.

In closing, the writer emphasizes the important part taken by the kidneys in the disease, and insists upon frequent examinations of the urine, for the purpose of avoiding excessive alkalisation. If the urine shows no crystals or concretions of uric acid, there is no reason for prescribing alkalies, and the diuresis must be increased by the daily ingestion of three or four glasses of boiled water.

State Medicine.

EDITED BY HARRY SEYMOUR PEARSE, M. D.

Résumé of the Medical Legislation of the Last Session of the Legislature.—Where much good could have been done for the people of our State by its Legislature, little was accomplished. During the session about three hundred bills pertaining to medicine, directly or indirectly, were introduced. The great majority were routine in character, relating to vital statistics, hospital appropriations, and amending the general health laws. One or two strikes were launched and quietly pigeon-holed.

To consider those bills of greatest importance and interest to the profession, four failed to pass after leaving the committee, two remained in committee, and five were of the twenty-six which reached the Governor. So far, by the signature of the executive, ten of the twenty-six have become laws; the remaining sixteen are now in his hands.

Of the entire number but three have become statutes which can be said to do material good; the $5,000 appropriation for protection against the plague at New York harbor, and the two controlling the practice of midwifery in the counties of Erie and Chautauqua, respectively.

The four that failed to pass after leaving committee were all important measures: The "Optometry bill"—a pernicious measure—came within three votes of passing the Assembly; having once been buried in the committee on general laws, it was rein-

troduced, slightly amended, and referred to the rules committee, which promptly recommended it; all in the face of well organized opposition on the part of the better element of the profession throughout the State; the "Impure Ice" bill — a wholesome and necessary measure—was defeated in the Assembly, we understand, by a piece of political chicanery and to enable one member to "get even" with some political brother; if this is so, we are sorry for the State in having men of such small calibre to represent it; the bill providing for a municipal laboratory in New York city passed the Senate, but as far as we can learn, stopped there, as there is no record of it in the Assembly; a vicious measure in the form of a bill, giving the Riverview Sanitarium, at Fishkill Landing, the right to confine inebriates for any period of time, on the certificate of two physicians, was promptly and creditably defeated.

Two bills of considerable importance remained in committee; the "Adirondack water bill," which provided for a survey of the eastern shed of the Adirondack mountains, to ascertain whether it could be utilized as a generous and pure water supply; it should have become a law, and its defeat in committee only retards progress in the right direction; the "State Medical Examiner's Bill," which provided for the representation of the New York State Medical Association on the State Board of Regents' Examiners also rested in committee.

The three important bills of the ten signed by the Governor have been mentioned, the others relate to vital statistics, general health matters, the prohibition of tobacco to minors in prisons, and making the use of knockout drops a felony. Bills appropriating moneys to Craig Colony for Epileptics, the hospital for criminal insane at Dannemora, and to several other hospitals, were also signed.

But two of the number now in the Governor's hands are sufficiently important to be considered; the so-called "M. D. Bill," which provides for a three-years' course in medical colleges, for college graduates, and the "Dispensary Bill." Concerning this bill, to quote the *Medical Record:* "It is safe to say that no legislative measure presented during the past session carries with it more weight of approval on the part of the medical profession, and more interest to the public at large, than this to which we refer."

It is not necessary to discuss the measure here, readers of current medical periodicals will have had their fill of the "dispensary evil" question, and will know the provisions of the bill. It is sufficient to say that it should become a law.

The work of the control of tuberculosis received little assistance or encouragement at the hands of the Legislature, only $15,000 being placed in the general supply bill for this necessary undertaking.

The entire work of the session, as far as positively aiding the advance of medicine, or the protection of the people from disease, was unsatisfactory. A finger cannot be placed upon a single law which will work a lasting good to the people.

In the eyes of the medical profession, which is cognizant of the needs of decisive and comprehensive laws and of moneys to fight disease, the negligence of our Legislature is shameful and not far short of criminal.

A New Law Easily Evaded. — One of the first bills signed by the Governor, and constituting chapter 42 of the Laws of 1897, provided "That anyone who is found in possession of a narcotic or anæsthetic, unless upon a physician's prescription, shall be guilty of a felony," and was popularly known as the "anti-knock-out-drops bill." The provisions show that it is directed against the iniquitous and common practice of using narcotic agents to assist crime.

The first case after the law went into effect occurred in New York city, April 1st, less than three weeks after the signing of the bill. The accused had been convicted and brought into court for sentence. The recorder refused to pass sentence and released the prisoner on the ground that he — the accused — had purchased the narcotic — chloral hydrate — for a friend on the prescription of a physician.

We venture to say that nine out of ten cases brought to trial will have a similar ending, and regret that it is a fact that every purchaser of a narcotic can easily show the prescription of a physician, also that it would not be difficult for the criminally inclined to procure such a prescription under false pretenses.

The law is an excellent one in its intentions, but it is to be feared that it can and will be easily evaded.

Two Steps in Advance.—Within the past month the New York State Board of Health has made a ruling that all anti-toxine placed on sale in the State shall be tested by the bacteriologist of the board. Not having a plant of its own to manufacture anti-toxine, it has acted wisely and well in determining the purity and strength of the different articles on the market. We assume that the board has the power to prohibit the sale of a preparation deficient in any way.

The movement is but a step in the line of advancement which the ANNALS in its March and April numbers saw fit to point out.

The New York City Board of Health now manufactures vaccine virus, and has placed it on the market. It assures the profession that the virus is tested chemically and bacteriologically before it is put out, and we presume that the board holds itself responsible for the article.

Both anti-toxine and vaccine virus should be under the control of State or city boards. They have become the objects of competition in a business way, and in the struggle for supremacy, with profit to the maker at the same time, the integrity of the preparation both as to purity and strength must necessarily be jeopardized.

By all means give the control of these fluids to the State or city health authorities, for whom there is no profit, and with whom shall rest the responsibility of their purity.

Medical News.

Association of the Alumni of the Albany Medical College. Twenty-fourth Annual Meeting. — The twenty-fourth annual meeting of the Association of the Alumni of the Albany Medical College was held in the Alumni Hall on Tuesday, April 20, 1897. The usual informal reception was held in the library, where coffee and sandwiches were served, photographs exhibited and greetings exchanged, between the hours of 9 and 11 A. M. The meeting was called to order by the President, Dr. William Hailes ('70), of Albany, at half past ten o'clock.

The following members of the Association, with invited guests, students of the college and others interested were present: H. D.

Didama, ('46); I. G. Johnson, ('53); H. B. Maben, H. D. Wells, ('57); M. Felter, ('59); A. Vander Veer, ('62); A. B. Huested, ('63); E. I. Wood, ('65); W. Morgan, ('69); D. C. Case, W. Hailes, W. G. Tucker, ('70); J. B. Stonehouse, J. K. Thorne, G. L. Ullman, ('71); G. S. La Moree, ('72); H. E. Mereness, ('74); J. F. Barker, H. S. Edson, J. Warwick, ('77); U. B. La Moure, G. P. K. Pomeroy, W. O. Stillman, ('78); E. A. Bartlett, W. J. Nellis, ('79); C. B. Herrick, ('80); F. L. Classen, C. H. Crawford, W. P. Mason, J. H. Mitchell, ('81); W. B. Sabin, T. F. C. Van Allen, J. B. Washburne, ('82); M. J. Dwyer, T. W. Nellis, J. F. Riley, ('83); R. Babcock, J. V. Hennessy, H. Hollidey, W. F. Robinson, ('84); T. L. Carroll, M. MacHarg, ('85); J. A. Cutter, W. M. White, ('86); J. H. Bissell, H. T. Brooks, C. W. De Baun, M. F. Drury, A. W. Johnson, W. G. MacDonald, A. MacFarlane, C. H. Moore, H. F. C. Müller, H. L. Potter, Jr., J. E. Sadlier, ('87); G. E. Lochner, ('88); A. H. Bayard, J. M. Mosher, ('89); W. A. Alexander, E. V. Colbert, T. H. Flynn, G. T. Moston, A. G. Root, ('90); W. S. Ackert, C. E. Davis, L. Le Brun, J. W. Wiltse, ('91); W. I. Goewey, W. G. Lewi, L. H. Neuman, C. F. Theisen, ('92); E. M. Bell, H. E. De Freest, T. W. Jenkins, J. Jones, M. S. Reid, J. B. Swett, Jr., ('93); H. W. Luchsinger, J. R. McElroy, R. Sheldon, F. B. Stellwagen, ('94); E. N. K. Mears, C. L. Myers, W. J. Wansboro, ('95); A. E. Falkenburg, A. P. Muir, R. J. Taylor, ('96); I. Applebee, T. J. Arundel, E. W. Baltes, H. E. Battin, J. J. Beard, J. G. Coleman, C. Emerick, J. H. Fallon, W. L. Fodder, J. Giffen, W. S. Graham, L. T. Griffith, W. C. Griswold, F. N. Guyer, E. J. Hanratta, R. L. Howland, R. H. Irish, H. W. Katz, W. G. Lewis, H. J. Lipes, E. F. McCormack, W. C. McCulloch, G. C. Merriman, J. J. Noonan, A. M. Ottman, C. H. Richardson, A. J. Ronan, G. E. Schoolcraft, W. J. Sheehan, W. E. Silcocks, C. J. Slocum, J. A. Stevenson, C. N. Van Denberge, ('97); H. Hun, C. S. Merrill, S. R. Morrow, S. B. Ward, (hon.).

The President introduced Professor James P. Boyd, M. D., who delivered the following address of welcome to the alumni on behalf of the college faculty:

ADDRESS OF WELCOME.

Mr. President and Gentlemen of the Alumni Association:

As the accredited agent of the faculty of the college, I extend to you all a most hearty greeting and welcome.

To the members of the graduating class of '97 I offer my sincere congratulations.

Events of unusual importance have rendered the past year a remarkable one in the history of the college, and have served to dispel any doubts concerning the progressive tendencies of this old medical school. Thanks to the philanthropy and generosity of that unassuming citizen of Albany, Mr. Matthew W. Bender, who has so nobly advocated scientific research, we are able this year to open to you the doors of the new Bender Hygienic Laboratory. This institution was dedicated with imposing ceremonies on Tuesday evening, October 27th, 1896. The Park Commissioners of the city of Albany allowed the building to be erected on land devoted to public usage; and the faculty of the Albany Medical College, by a unanimous vote, contributed their salaries as teachers in the Medical College for the coming year for the purchase of the entire scientific apparatus. Dr. George Blumer, late of the Johns Hopkins University, is director of the Laboratory.

At the beginning of this year the ALBANY MEDICAL ANNALS lost its editor, Dr. Howard Van Rensselaer, who had so successfully managed it for the last five years. We regret very much that Dr. Van Rensselaer has been obliged to sever his connection with the ANNALS. On the first of January, 1897, the ANNALS appeared in a new form, and under new management. Drs. MacFarlane and Mosher were appointed editors. With two such earnest and progressive workers at the head of the ANNALS, we can have no fear for the future.

At a meeting held November 23d, 1896, the organization of the Albany Hospital Training School for Nurses was completed. The school has been fortunate in securing the services, as superintendent of nurses, of Miss Emily MacDonnell, recently connected with the Johns Hopkins Hospital, at Baltimore. Albany has long felt the need of such a training school.

Early in the autumn of 1896 an effort was made to start a fund for the erection of a new hospital to take the place of the old institution on Eagle street. The results have far exceeded expectations, and already more than half of the amount required has been subscribed, and that, too, in a year of financial depression. When we consider that a new hospital means an institution built in accordance with the most advanced views of the day, and thoroughly equipped, it is a wonder that the citizens of Albany have been so ready to give to this old institution. We hope before another year has passed away to be able to show you a modern hospital, thoroughly equipped and worthy of the Capital City of New York State.

Once more, gentlemen, I welcome you cordially.

On motion of Dr. J. H. Mitchell, the reading of the minutes of the last annual meeting was dispensed with, and the minutes as printed adopted.

Dr. J. V. Hennessy moved that the President appoint a committee of five to nominate officers for the ensuing year. Carried. The president appointed as such committee: Drs. J. V. Hennessy ('84), E. I. Wood ('65), E. A. Bartlett ('79), D. C. Case ('70) and J. M. Mosher ('89). The committee retired.

The report of the executive committee and recording secretary was then presented. It stated that two meetings had been held during the year. At the meeting held April 28, 1896, the recording secretary presented a report of the last annual meeting, including an account of the commencement exercises and Alumni dinner, and he was authorized to have the same printed in the ALBANY MEDICAL ANNALS for May, and to cause 1,400 reprints of the same to be made in the usual form and distribute them to the members of the association. He also presented a statement of the Alumni dinner account, from which it appeared that the receipts from ninety-nine tickets sold had been $148.50, with disbursements amounting to $346, leaving a deficiency of $197.50, which has been paid by the college faculty. Attention was called to the fact that the receipts from the sale of tickets for the dinner were less than forty per cent. of the expenses, and the committee was of opinion that the diminished attendance at the dinners during recent years indicates that less interest is taken in them than formerly. While unable to account for this fact, they are of opinion that it is not good policy to continue them, if the members of the association no longer show a desire to maintain them, and they have, therefore, this year, substituted a reception at the Bender Laboratory, to take place this afternoon, to which all alumni are cordially invited to be present. A collation will be served, and an excellent opportunity afforded not only for social intercourse, but for inspecting this new and admirably equipped department of the college. When it appears in the future that a desire exists among the alumni for the restoration of the alumni dinner, the committee will be glad to return to it. On nomination of the historian, the following class historians were appointed: For '47, Dr. J. H. Helmer, Lockport, N. Y.;

'57, Dr. D. E. Dickerson, Kansas City, Mo.; '67, Dr. W. H. Nichols, West Sand Lake, N. Y.; '77, Dr. J. F. Barker, Albany; '87, Dr. J. H. Bissell, Troy, N. Y. At the meeting held January 22, 1897, the distribution of the proceedings was reported. A copy had been sent to each of the Alumni, together with a college catalogue and treasurer's blank. The order of exercises for Alumni day was discussed and the following committees were appointed: Luncheon, Drs. Hailes, Nellis and Tucker; Bender Laboratory reception, Drs. Vander Veer, Hailes, Tucker, Bendell, MacFarlane and Root; reception committee, Drs. Stonehouse, Van Allen, Davis, Cook, Sabin, Babcock, Mereness, Happel, Lewi and Washburne. Dr. Tucker, from the committee on publication of the ALBANY MEDICAL ANNALS, reported that Dr. Van Rensselaer had resigned the editorship of the journal in December last, and that the committee had appointed Drs. A. MacFarlane and J. M. Mosher editors and publishers of the ANNALS, and that they had already issued the January number in new and attractive form. On motion a vote of thanks was unanimously tendered to Dr. Van Rensselaer for valuable services rendered by him during the five years in which he had edited and conducted the ANNALS with signal success. On motion, the faculty of the college were invited to participate in the exercises of Alumni day and to appoint some representative to deliver an address of welcome to the Alumni at the opening of the annual meeting. The corresponding secretary was authorized to have the usual notices announcing the annual meeting printed and to issue the same. The recording secretary reported that the number of names with addresses upon the Alumni list was 1,358, and the total number of graduates to, and including the class of '96, was 2,152. Deaths reported during the last year, eighteen. On motion of Dr. Cutter, the report was received, adopted and ordered placed on file.

The treasurer, Dr. T. F. C. Van Allen, presented his report for the year, from which it appeared that the balance on hand at time of last annual report was, $110.84; received during the year for dues, 125.00, and for interest, $3.84. Total, $239.68. Disbursements, $114.74, and balance on hand, $124.94. On motion, the report was referred to a committee consisting of Drs. G. L. Ullman, D. H. Cook and J. B. Washburne, who

examined the same, compared the disbursements with the accompanying vouchers, and subsequently reported it correct. On motion, the report of the committee was received and the committee discharged, and the report of the treasurer accepted and ordered placed on file.

The President's address being the next order of business, Vice-President Mitchell was called to the chair, and President Hailes delivered the following address:

PRESIDENT HAILES' ADDRESS.

Fellow Alumni and Gentlemen:

It is more than a quarter of a century ago since a raw-boned, badly broken colt was harnessed to the Juggernaut car of medicine and made to do his share in getting the ponderous machine along. It could not have been of much service for some time on account of the unskilled efforts of the willing but clumsy animal. And after twenty-five years of constant and unremitting effort, it still demands the best faculties of the best men to impart instruction to eager and receptive minds.

This fact is due to a number of causes. The teacher may be at fault, both in his lack of knowledge of, and familiarity with, the subject he teaches, and his way of presenting it. Or the student may not have been properly prepared to enter upon the study of medicine, or he may prove inattentive, careless, and indifferent.

For these reasons I have ventured to address you on the subject of improved methods of teaching, and I trust my remarks will be at least interesting, even to those who have long since left the halls of learning, and are putting into practice the knowledge obtained while at college. I know I echo the sentiment of many graduates when I say that we often regret not having paid closer attention, while at school, to the words and ideas of our instructors.

One of the most important elements of success in the whole realm of teaching is time. It would, indeed, be difficult for any reasonable man to present its demands in too strong a light. For without a proper amount of time nothing satisfactory can be obtained.

Enthusiastic and continued devotion on the part of the student, combined with excellent methods and great efficiency on the part of the instructor, would be unavailable, providing that insufficient time was given. With an ideal medical school, a new hospital, perfectly equipped laboratories, and a corps of eminent teachers, yet with insufficient time, the results could not prove anything but unsatisfactory.

To-day we enter upon our four years' course of study, and it is with great rejoicing, because it relieves the most pressing necessity of the hour; and one of the greatest evils of our present system will be abated. The strain upon pupil and teacher will cease; the old method of cramming must now retire, and a healthy, well-regulated assimilation take its place.

The frequent and urgent attacks of literary colic which any instructor meets will only occur in some belated, always-behind-hand student, who, in consequence of inattention or idleness, attempts to learn too much in too little time. He suffers the torments of the damned when, in imperfect and incoherent speech, he replies to the questions of his tormentors at examination time. These unpleasant difficulties will be greatly decreased by the extension of the period of study. I have thought that teaching might be made easier, and rendered more graphic, by certain aids: Not alone in the laboratory by the use of a well-arranged illustrated note-book; with outline drawings, which each student be required to fill out full details. But this system can be put to use in a wider field. In the lecture-room, the operating-room and in section work. For example, in the demonstration of dressings for fracture, or the methods employed in the reduction of dislocations. Also in demonstrating the mechanism of a labor in the various presentations. The successive steps in the performance of a surgical operation, selecting at random, excision of the breast for malignant disease:

First. The position and extent of the external incisions.

Second. The surgical relations of the vascular and nervous supply to the adjacent regions liable to infection.

Third. The best method of removal of the diseased chain of lymphatic glands.

Then, by means of a specially constructed microtome, several hundred sections (practically from the same locality of the growth) may be cut in two or three minutes.

With a drawing made by means of the camera lucida, and a reproduction by a specially devised mimeograph, copies can be supplied to each student, and he can become familiar with the microscopic structure of the neoplasm. This is but a single example of what might be done; to its application to other diseases I will not allude.

In the department of medicine, pneumonia, nephritis, cirrhosis, and in nervous diseases, its application is easy. But its principle advantage will be in the study of normal and pathological histology and bacteriology. Where there is so much fine detail to be mastered, any method that calls into action several of the senses will surely make a more lasting impression than when a single faculty is called upon to record facts. So that after the systematic study of all the normal tissues and organs of the body, from ovum to organism, the study of pathological histology will follow so much more understandingly, because a correct idea of the normal standard has been firmly and intelligently established. One of the most important and useful aids in both teaching and practicing is the remarkable discovery, by Prof. William Konrad Roentgen, of the peculiar rays which cannot be diverted, but which will in all probability, sooner or later, penetrate all objects. Of the possibilities of these rays in science, it would be difficult at present to speak, but to-day they have proven to be of greatest utility in surgery, with some promises of great development in scientific problems. We can see with startling distinct-

ness fractures of the bones, and even watch their reunion without removing the splints and bandages, and prevent the fragments from getting out of position by properly maintaining an appropriate dressing. We can detect deformities in bones and receive substantial aid. For example, when the movements of an articulate is interfered with, we may determine the nature and extent of the obstruction, and intelligently advise as to the best kind of surgical treatment indicated. We can watch the growth of bone, and the relations of the epiphyses and diaphyses, and map out deformities of the spine and pelvis, the structure of all joints, elbow, shoulder, knee and hip; and we can readily distinguish dislocations from fractures, and settle beyond cavil the existence or non-existence of dislocation complicated by fracture. It is often demanded by our patients that they be submitted to the X-rays in order that all doubts may be settled regarding their cases. It would certainly be very unpleasant for us if, after expressing an opinion, to find later on that the X-ray revealed something quite different. We can determine whether there has been any absorption of bone in encroaching malignant growths about them, and can localize exactly the location of bullets, fragments of cartridges, and other foreign bodies embedded within the body; and not only in extremities and trunk, but within the thoracic and abdominal cavities. We can detect the formation of pus; watch the motions of the heart; see the form of the liver, lungs, kidneys and spleen, and even the fœtus in utero. But at present we are unable to determine the pathological conditions of different organs, but in view of the wonderful advances made in the recent past, it would not be very strange if we should be able before long to see and describe many pathological conditions.

Most beautiful radiographs have been made of injected cadaver, and recently Dr. Codman, of Boston, made an accidental discovery. In photographing an extremity of a subject which had been embalmed by the ordinary preserving fluid, he found that the vessels were marvelously demonstrated, and that the shape of the organs were visible. This fact might be used to advantage in the study of the vascular supply in diseased areas. But we would not be warranted in its application to our patients, even for the sake of science. It must not be forgotten that there are many points brought out in the negative which escape the vision even of an expert in the use of the fluoroscope; besides the advantage of having an indisputable record for reference and preservation. The use of the X-ray paper simplifies the matter still more, and may be often used to great advantage by the paper molding itself to uneven surfaces.

The fluormeter is a newly-invented device, by means of which the relations and size of the object and exact distance are obtained, for, owing to the fact that X-rays diverge, the shadows are often distorted and enlarged, and its important relations disturbed.

Whenever exactness in position and relations of surrounding parts are necessary to guide the surgeon's knife, this new instrument promises important aid.

The disadvantages in the use of the X-rays are an occasional dermatitis,

with ulcerations and sometimes loss of nails and hair. Yet it has been noticed to induce the growth of hair. This was probably the result of a moderate degree of irritation causing a hyperæmia of the part.

I will not venture to speak of its use in ophthalmology or psychology, but will leave the presenting of these subjects to the specialists in these departments. An apparatus has been completed which is so simple in construction and manipulation that it requires little or no mechanical or electrical knowledge for practical successful work. There are three kinds at present in use — static, Tesla alternating coil, and the Ruhmkorff induction coil.

It is difficult to say which is the best, for all are made to do equally good work. My own limited experience has been confined to the use of the static machine, which is the form of apparatus to be seen at the laboratory to-day at 4 P. M. It is made by the L. E. Knott Apparatus Company, Boston. I have never seen any unpleasant effects from the use of the static machine. It is economical and less destructive to tubes, and has produced some of the finest work. It is also free from danger. By the employment of the fluoroscopic screen, the time of exposure has been greatly lessened, and can be made almost instantaneous. But many subjects require three or five minutes, or even more.

While it might prove interesting to go into the physical theories of the phenomena of electrical discharges into vacuum tubes, of ether vibrations, and the so-called fourth state of matter, I will refrain.

It was with a new pleasure that I read once more Dickens' famous trial scene of Bardell v. Pickwick, when "Samivel" Weller was asked: "Do you recollect anything particular happening on the morning when you were first engaged by the defendant?" said Sergeant Buzfuz. "I do," replied Sam. "Do you mean to tell me, Mr. Weller," said Sergeant Buzfuz, folding his arms emphatically, and turning half way round to the jury, as if in mute assurance that he would bother the witness yet; "do you mean to tell me, Mr. Weller, that you saw nothing of this fainting on the part of the plaintiff, in the arms of the defendant, which you heard described by the witnesses?" "Certainly not," replied Sam. "I was in the passage till they called me up, and then the old lady was not there." "Now attend," said Sergeant Buzfuz, dipping a large pen into the inkstand before him, for the purpose of frightening Sam with a show of taking down his answer. "You were in the passageway, and yet saw nothing of what was going forward. Have you a pair of eyes?" "Yes, I have a pair of eyes," replied Sam; "that's just it. If they was a pair of patent double-million magnifying compound gas microscopes of hextra power, p'raps I might be able to see through a flight of stairs and a deal door; but, being only eyes, you see, my wision's limited."

At this answer, which was delivered without the slightest appearance of irritation, and with the most complete simplicity and equanimity of manner, the spectators tittered, the little judge smiled, and Sergeant Buzfuz looked particularly foolish.

The foregoing quotation does not reveal even a suspicion of the knowledge of the X-rays, but the inimitable Dickens actually, prophetically portrays the fact of picture shadows many years before Prof. Roentgen's shadow pictures appeared. It occurs in the weird Christmas carol, "Marley's Ghost," where he said: "The same face, the very same Marley, in his pigtail, usual waistcoat, tights and boots, the tassels on the latter bristling like his pigtail, and his coat-skirts and the hair upon his head. The chain he drew was clasped about his middle. It was long, and wound about him like a tail, and was made (for Scrooge observed it closely) of cash boxes, keys, padlocks, ledgers, deeds, and heavy purses wrought in steel. The body was transparent, so that Scrooge, observing him and looking through his waistcoat, could see the two buttons on his coat behind. Scrooge had often heard it said that Marley had no bowels, but had never believed it till now."

Thanking you, gentlemen, for your kind attention, I wish you great pleasure at our annual reunion, and I hope that we may all meet at the Bender Hygienic Laboratory this afternoon, where we may inspect and admire the munificent gift of its noble-hearted donor, Matthew W. Bender.

The members of the class of '97 were present in a body, and rose as the President addressed them at the conclusion of his address, and received them into membership in the association.

Dr. H. F. C. Müller moved a vote of thanks to the President for his interesting address, a copy of which he was requested to furnish for publication. Vice-President Mitchell put the motion to a vote and declared it unanimously carried.

President Hailes then resumed the chair.

The report of the historian was then read as follows:

REPORT OF HISTORIAN, DR. CHARLES E. DAVIS.

Mr. President and Fellow Alumni:

It has been most gratifying to me, as historian, to note how full each historian's report is of letters from alumni of this college, expressing fondness for this old school of learning as it was, and real pride and admiration of the work it is doing to-day. If each alumnus will read the several reports of the historians as presented, they will realize more fully than ever the important position the Albany Medical College has taken in history, and the honor and respect which graduates of this college demand and receive wherever they go.

It will, perhaps, be interesting to know that out of eight hundred and eighty graduates between the years 1839 and 1865, as far as can be learned, two hundred and sixteen served as surgeons in the army, some

of whom became distinguished after the war, and still live, honored and respected for services rendered their country at great personal loss. Two of the many whom I might mention are now connected with the college, and are both active and highly respected men, namely, Dr. Albert Vander Veer, who was surgeon of the 66th New York Volunteers, and Dr. Herman Bendell, assistant surgeon, 16th New York Heavy Artillery, and surgeon 86th New York Volunteers, both members of the class of 1862. Of the classes which report to-day, Seth W. Langdon, '47, was assistant surgeon, 17th New York Volunteers; of the class of '57, J. D. Benton, assistant surgeon 11th New York Volunteers, promoted to surgeon 98th New York Volunteers; Adam H. Cochrane, assistant surgeon, 15th New York Engineers; G. S. Dearborn, assistant surgeon, 15th New York Volunteers; D. E. Dickerson, surgeon, 33rd New York Volunteers, and surgeon 1st New York Veteran Corps; G. C. Douglass, assistant surgeon, 4th New York Volunteers, assistant surgeon 1st New York Cavalry, promoted to surgeon 134th New York Volunteers; Thomas B. Drake, assistant surgeon, 148th Illinois Volunteers; N. C. Harris, assistant surgeon, 155th New York Volunteers; Charles N. Hewitt, surgeon, 50th New York Engineers; D. E. Kelsey, surgeon, 64th New York Volunteers; Robert Loughran, surgeon, 80th New York Volunteers; Charles Mead, assistant surgeon, 112th New York Volunteers; H. A. McG. Wilson, assistant surgeon, New York Rifles; H. B. Maben, assistant surgeon, David's Island Hospital, Campaign, 1864.

I desire to read the following letter received from the historian of the class of '57:

KANSAS CITY, Mo., *April* 6th, 1897.

Dear Doctor Davis:

Owing to the sickness of my wife, it will not be possible for me to attend the alumni meeting on the 20th of this month. I have, therefore, expressed to you my report of the class of '57. Please find enclosed my check for fifty dollars, to be expended as the Alumni Association may deem best. Should you ever visit our city, I should be pleased to receive a call from you. Kindly remember me to all present, especially the class of '57. Say to them that at our house the "latch string always hangs out." With warmest assurances of high esteem, I am truly and sincerely yours,

D. ESTAING DICKERSON, M. D.

I wish to thank Dr. John B. Stonehouse for his very great assistance in preparing the army history of the alumni, and also for his valuable list of classes and addresses which he presented to the society last year. The historians for the classes of '47, '57, '67, '77, and '87 will report to-day.

C. E. DAVIS, '91,
Historian, A. A. A. M. C.

The historian read the following report of Dr. J. H. Helmer, class historian for '47:

REPORT OF THE CLASS OF '47. DR. JOSIAH H. HELMER.

Fellow Alumni:

I have been requested to prepare the class report for 1847. From the best statistics I can obtain, only five of the twenty-nine graduates of that year are living, and of these five I can only report for three. Dr. Barker, of Sing Sing, and Dr. Lenardson, of Saratoga county, do not reply to my letters of inquiry.

Fifty years ago to-day, January 26th, twenty-nine of us left college with high hopes for the future, and a wish to know of each other's success, but soon we lost knowledge of each other, and only by these class reports are we brought together again.

As this will probably be the last report for 1847, memory brings back to me many loving remembrances, not only of the professors who taught at that time, but of fellow-students. In my own close circle of friends were Avery, Koon and Adams. Avery died not long after graduating, of typhoid fever, at Rochester, N. Y. Koon and Adams both died in 1862.

Dr. J. W. Warner, of Seventy-second street, New York, after graduating, commenced the practice of medicine at Minersville, Montgomery county, but after six months' experience, concluded that he was not adapted to country practice, and went to New York, where he has followed his profession ever since. He has made a name for himself, and has left an impress for good upon the part of the city where he resides, and upon the church to which he united, and has laid up a very comfortable fortune for himself and family.

Dr. A. T. Hudson, of Stockton, Cal., who gave such a full report in 1887, has given not only a report of himself, but two others, members of our class. Dr. Julius F. Miner, who died in Buffalo in 1886, being at the time of his death at the head of the surgical staff in his city and Western New York. I remember Dr. Miner as a classmate, and regarded him as one of the best students we had, if not the best. He was of slight build, and gentle, almost effeminate, in appearance, and unfitted, it seemed to me, for the major operations in surgery. Dr. Hudson's letter is as follows:

STOCKTON, CALIFORNIA, *January* 4th, 1897.

J. H. Helmer, M. D., Lockport, New York:

DEAR DOCTOR — Your favor is at hand. I could hardly realize that ten years had rolled away since we exchanged letters reviewing our college days. It is evident that the faculty think you are the right man for historian of the class of 1847 when they call you the second time.

It is doubtful if I can help you much with knowledge of those in your list of the unknown members, or give you any item of interest of myself. I have never met one of our class since I left Albany. I had intended to visit Dr. Julius F. Miner, at Buffalo, in 1886, but his early death prevented. He was not only a bright, progressive man, but he was refined and noble in sentiments such as constitute a true gentleman. He was a room-mate of mine in Albany during the session, and we were fast

friends. He was peculiar in one respect for a student. He, like Oliver Wendell Holmes, had very little faith in the curative power of medicine. When asked why he was studying it, he answered that "medicine was simply an orthodox system of guessing, but surgery was a field of knowledge and art, in which, if a man is competent, he can do much good." He had an elder brother for whom he had a great affection. He said that they had such implicit confidence in each other's fairness that they kept no account between themselves. One purse was open for use at the discretion of each, and both were careful not to use the last dollar for himself. Such moral uprightness made him a noble model to lead in our profession.

In your list of unknown I see but one name of which I can give any items. That is the name of John P. Wallace, who was a bright student of refined tastes. He had an ardent love for botany, and excellent artistic ability. I became acquainted with him about the middle of the term. He had painted a medicinal plant for Prof. Beck. Seeing this, and being interested in this line of work, I was drawn to him by natural affinity. He was tall, of rather slight build, of sandy complexion, and of affable manner. At the close of the term I went with him to his home, and spent a few days in Lansingburg, a few miles above Troy, N. Y. He was an upright, conscientious man. He died about three years after of consumption. Had he lived, he would have made a distinguished member of our noble profession.

At this time I had dabbled at sketching and painting for amusement, but his nice painting for the professor awakened in me a desire to work for some useful object myself. Since then I have been painting some of the flowers in the Western States, and of California. I have now over four hundred paintings, which I value from a botanical, rather than an artistic, standpoint.

Herewith I send you two specimens of California flora. The Cascara Sagrade, or California coffee tree, is a medicinal shrub of the buckthorn family. It is probably superior, as an aperient, to any species of the Rhamnacea now in use. The blossom is small and greenish white. The Zaushchneria is one of our ornamental flowers, which grows freely over our coast range of mountains. It is very beautiful, but not fragrant or medicinal.

To what extent this "hobby" has been a factor of professional help cannot be computed in financial terms. It has served in surgical cases to illustrate morbid growths and rare diseases, thereby preserving useful facts to our profession. It has been a source of recreation and pleasure, and a good sanitary remedy against depressing self-contemplation, alias "the blues." It opens the door to broad fields for study of natural laws, thereby lifting one plodding creature to higher manhood.

I am still in practice, and deeply interested in this essentially the noblest profession extant. It affords unlimited scope for every mind to delve into science, art, literature and exalted altruism. Hence, I trust,

by one or all of the above lines of progress may be found every living graduate of the class of 1847. Most truly yours,

A. T. HUDSON.

The other person named in Dr. Hudson's letter, John P. Wallace, is reported as unknown. I wish the secretary to record what Dr. Hudson says of him.

For myself, I have but little to report which can be of interest to those who will be present at this meeting.

I have passed the 76th mile-post in my life's journey, and am waiting to enter upon the journey beyond, not dreading it, nor anxious to go. Twenty years ago or more I gave up the practice of medicine, which I have often regretted, and my advice to the young men who are about to embark in this new field, to them full of hope, is *not* to leave it for business or pleasure. It will require close study to keep up with the advance in your profession. The doctor of to-day must be more than he was fifty years ago.

Respectfully,

J. H. HELMER,
Historian Class of '47.

The historian offered the following preamble and resolutions, which were seconded by the recording secretary, and unanimously adopted:

Whereas, The present needs of the college have long since outgrown the present building, be it

Resolved, That the $50 contributed by Dr. D. Estaing Dickerson to the Association be deposited with the treasurer, and held by him as a nucleus for a building fund for a new college building.

Resolved, That the thanks of the Association be tendered to Dr. Dickerson, class of '57, for his thoughtfulness and generosity in making this donation to the Association, and that the secretary be instructed to communicate these resolutions to him.

The historian then read Dr. Dickerson's class report, as follows:

REPORT OF THE CLASS OF '57. DR. D. E. DICKERSON.

Mr. President and Members of the Alumni Association:

Through the courtesy of Dr. Davis, historian, I have had the pleasure of acting as historian of the class of '57. The correspondence which the work necessitated has to me been very pleasant and agreeable, renewing and reviving, as it has, our younger and classmate days, scenes which occurred two score years ago (and it seems as but yesterday), scenes which we dearly cherish, and which live and linger in memory forever.

I regret very much, indeed, that circumstances prevent me from presenting this report in person. Nothing would give me more pleasure than to be present on this occasion, and take by the hand and look into the faces of those with whom we are by the bond of affection and association so closely and intimately linked. It is with profound sorrow that I note the fact that all those who were of the faculty when we were here (the class of '57) have passed away, have gone to that home beyond, where separation is unknown, where the "just, made perfect, are enjoying the vision of God."

We are proud to know that the Albany Medical College is in a flourishing, sound and healthy condition, and that she continues to take a front rank among the medical institutions in this country. I am also proud to note the fact that its alumni will comport with dignity, standing and intelligence with the alumni of any of the medical colleges of this country. Show me an alumnus of the A. M. C., and I will point you to an honored and respected citizen in the community where he lives. The State of New York, during the late war for the preservation of this Union and its flag, raised and put into the field, including its militia, 300 regiments. I have not before me statistics showing the number of medical officers that were commissioned to this command; but a fair estimate, including those for staff and hospital service, would be four medical officers to a regiment. This would swell the number to 1,200. Neither have I before me statistics showing how many were graduates of the A. M. C., or the number that was commissioned from other States of this Union. But we have, however, an abundance of proof to show that she was well and ably represented. The number of graduates in the class of '57 was 46. The number unaccounted for, and whose present whereabouts is unknown, is 13. The number living, and whose addresses are known and on file, is 22. The number who have died is 11. We are impressed with the fact that the close of the next decade will probably wipe out the class of '57, for all of us will have passed the three-score-and-ten notch, and the inevitable must follow.

It is, however, my earnest intention to be here at that time, and report progress, although we are forcibly reminded of that passage of scripture which says, "He who thinketh he standeth, take heed lest he fall." How appropriate to all. We know not when the "props will be knocked from under." We are amazed at the wonderful progress which has been made in our profession since we left our *alma mater*, forty years ago. What developments will be made during the next forty years! The class of '57 will never know, for soon we will have entered that "invisible unknown beyond." The following survivors have reported:

Dr. Robert E. Ensign writes that he is practicing his profession at Berlin, Conn.; that he is in good health, and living with the wife of his youth. Has two sons and one daughter, all pleasantly situated. The doctor has made a success in life. Was assistant surgeon, 6th Connecticut Volunteers; has been treasurer and superintendent public schools: is now serving his thirteenth year as coroner and health officer of Berlin;

was elected to the Legislature of Connecticut; is a member of the Republican party; is also a member of Grand Army of the Republic. He has won the confidence of the community where he lives, and wishes to be remembered to all present.

Dr. M. R. Carson is actively engaged in practice in the beautiful village of Canandaigua, New York, where he has resided since 1859. Has a beautiful home; has three sons and two daughters. One son is a banker, one a physician, one a dentist. The daughters are both pleasantly situated. The doctor is doing a large and lucrative business; is president of the Medical Society; read an essay at its last meeting on the prevention of consumption; is secretary of the Pension Board. He will endeavor to be present at this meeting. He loves his *alma mater*.

Dr. Newton C. Harris resides at Schuylerville, New York. He has made for himself a pleasant home. Has always done a large business. His health has become impaired by exposures during the late war, when in front of Petersburg, in February, 1865. Dr. Harris' life has been intimately interwoven with the life of the community in which he lives. In his early manhood he was closely identified with church, social and political interests of the town, and no one held greater influence. Always affiliated with the Democratic party. He was prominent and active in erecting the great battle monument in the town; many of the inscriptions thereon are from his pen. For his many good deeds the people have learned to love him. He wishes to be remembered to all.

Dr. J. G. Harrington, immediately after graduating, located at Windsor County, Vermont, where he practiced medicine until 1872, when he removed to Mankato, Minnesota, where he has since followed his profession with success. He has for the past ten years been vice-president of the Mankato National Bank. He married the best woman in all New England, with whom life has passed, and is still passing, very pleasantly.

Dr. J. D. Kenyon is practicing medicine at Westerly, Rhode Island, where he has built up a large and paying practice. His darling wife died in 1892, leaving him alone with one son, now seventeen years old. For the past sixteen years he has spent his winters South. At this writing he is sojourning at or near Key West, Florida. He prizes highly his *alma mater*, and all its associations, and wishes the college much prosperity in the future.

Dr. H. B. Maben lives in Kingston, New York; is now seventy years of age, and in perfect health. He is doing well; has a large gynæcological practice, and he has accumulated a competency. Was assistant surgeon during the late war; has kept aloof from the political arena; has been supervisor of the town, president of the Board of Education, and of various medical societies; has been twice married, one son by first wife, who graduated in medicine, and died at the early age of 29. He will be present at this meeting of the alumni, and hopes to meet many, especially of the class of '57.

Dr. H. D. Wells resides at Middleburgh, New York. He is now in his 68th year. Has practiced medicine 40 years with success. His health has

become impaired from a needle wound received at a *post mortem* some 16 years ago. He has accumulated a comfortable fortune. He is an active worker in church affairs, and belongs to the Prohibition party, where he intends to stay till he dies. He intends to be present at this alumni meeting, for he prizes highly his *alma mater*, and is anxious to know where all the survivors of the class of '57 now are, and how they are getting along.

Dr. Lorenzo Traver reports that he is getting along finely. He resides at Providence, Rhode Island, where he has built up a large and lucrative practice. He entered the United States Navy in 1861, and resigned in 1868. He is surgeon to the G. A. R. Post; member of a number of medical societies; medical examiner for a number of life insurance companies; is a member of the Military Order of the Loyal Legion of the United States. He will be present at the reunion.

Dr. Edward P. Howe lives at Jericho, Vermont. His report is of a sad nature. He writes, or his wife for him, that he is suffering from sclerosis. His hands are paralyzed, and he is unable to write. He says "that it would afford me the greatest pleasure to meet with the remaining members of the class; but that is denied me, and next to that is to receive a kindly word from them. You can hardly realize what a pleasure it was to me to hear from you." I sincerely hope and pray that each member of the class of '57 will write him a cheering word.

Dr. G. S. Dearborn reports that he resides at Rockaway, New Jersey. He has been in active practice nearly all the time since he graduated, and has met with success. He was assistant surgeon of the 15th Regiment, New Jersey Volunteers; was in the service over three years. The class of '57 and his *alma mater* have a warm place in his breast. He sends his best wishes to all, hoping that we will all meet in the happy home beyond.

Dr. Robert Loughran resides at Kingston, New York. The doctor reports that he is now three score years and two; that he has been in active practice, and is in the enjoyment of health; that he has no reason to complain of the success which he has made during the forty years which he has been engaged in active practice. He prizes highly his early associations with the A. M. C.

Dr. J. H. Stevens lives at Monlour, Iowa. Reports that he came to this place in 1859; went into the army as assistant surgeon in 1862; returned here in 1876; went into the drug business, which he kept up till 1886; then went on a farm four years, and then went back to the army. He says the four years on the farm is all the position of honor he has had, except three years in a creamery. He is doing finely, and wishes to be remembered to all.

Dr. John E. Prichard reports that he has been a resident of Baltimore since 1888. He has been married twice; first wife died in '58, and left one daughter, who is now Mrs. F. H. Bell, of Albany. The doctor writes that he has always done a large business; has a son in practice with him. His health has, during the past six years, failed from a chronic disease contracted while in the army. Spent one year in the hospitals of London.

In the city of Baltimore, he says, we have seven medical colleges, and all taken collectively, they cannot make any comparison with the A. M. C.

Dr. S. J. McDougal resides in Boston. Immediately after graduating he entered the field of dentistry. He writes: "Forty years is a long time; the world has changed, and with it you and I. Yes, and the whole class; what would be interesting to us then would probably be stupid to us now. Forty years! Lord! what changes since then! Had we been told that you and I could stand in our offices — Boston and Kansas City — and talk with each other, or look through a man's body and see foreign substances, or the lungs and heart expand and contract, we would have said that the narrator was either a fool or a mad man. You ask how I have succeeded in fighting life's battles. Well, as far as money or its representative is concerned, the world calls me successful. Have not made a 'great pile,' but enough to pay my debts and live in comfort. Morally, well, I have managed to live in peace with my neighbors, and to escape the 'clutches of the law.' Physically, 'A No. 1.' Mentally, poorly. Forty years have come and gone, and how little I know even of the things right around! Yes, and I feel how little the best or *wisest of us know*. We get a theory well under way, and along comes the X-ray, or something else, and knocks it out from under us. I have never held public office. Have been president of the Massachusetts Dental Society, professor of pathology and therapeutics in the Boston Dental College. My family consists of myself. I lost my wife two years ago. I have three daughters, but they are married, and have homes of their own. I shall try to go to Albany, and be present at the reunion, for I prize highly my *alma mater* and everything connected with the A. M. C."

Dr. William G. Allen lives at Mansfield, Massachusetts, where he has practiced since July, 1857. He writes that he has always done a large business, and his early expectations have been more than realized. Married in 1860, and has one child, a son, now 29 years old. After graduating in 1894, he continued his medical studies in Europe till May, 1896. He is now practicing with me, and I think he will soon take charge of the entire business, for I need rest. I hope to meet the class this year, for I feel a deep interest in the A. M. C., and especially for the survivors of the class of '57.

I would not consider this report complete did I not mention my old classmate and room-mate, Dr. A. W. Goodale, although he graduated in the class of '58. We were chums during the sessions of '56 and '57. We were from the same county of Jefferson. We were strangers till we met in the omnibus that was taking us to the railroad station. We were the only passengers, and we soon learned that we were both bound for the A. M. C. We have since been warm friends. The doctor has made a success in life by close application and industry. He has accumulated a snug fortune. He was commissioned in April, 1863, by Governor Seymour, assistant surgeon 10th New York Heavy Artillery, in which capacity he served till after the war closed. In 1868 he was placed in charge of the medical department of the Phœnix Mutual Life Insurance

Company, with headquarters at the company's office in Hartford, Conn. In 1888 he returned and made the beautiful and thrifty city of Watertown his home. He is surrounded by everything that goes to make life cheerful and happy. His wife is a lady of culture and education. He has three children, all pleasantly situated. The doctor is president of a bank in Da. He is the owner of many large, rich and productive farms. Is treasurer of the Thousand Island Park Association, where he has a very attractive summer home. His heart throbs and beats warmly at the mention of his *alma mater*, and he wishes to be remembered to all.

I would most respectfully report that I am now nearly 62 years old, and in good health. I was born at Rice's Corners, Watertown, New York, May 19th, 1835. After practicing at the home of my birth and vicinity four years, was chosen surgeon to Sing Sing Prison, which position I held when commissioned by Governor Morgan assistant surgeon of the 33rd New York Regiment. Was promoted surgeon in the summer of 1862, and remained with the regiment until its return. While in charge of the Liberty Hall Hospital, on the Peninsula, containing nearly 500 men, was made prisoner, on the second morning of that terrible seven days' battle in front of Richmond. Liberty Hall was on the extreme right wing of the Army of the Potomac, and was once the property of Patrick Henry. My tent was directly over the spot where that great and noted orator and statesman was born. During the winter of 1863 was placed in charge of General Howe's Division Hospital, at Aquia Creek, and when General Hooker's series of battles occurred, was given the entire supervision of all the hospitals of the 6th Army Corps. The 33rd New York, after being mustered out (its term of service having expired), re-enlisted as 1st New York Veteran Cavalry, and I was by Governor Seymour commissioned its surgeon. It will be remembered that the *good and lamented Quackenbush* was then the Surgeon-General of the State on the Governor's staff. Remained in the capacity of surgeon till after the close of the war.

In the fall of 1865 I located at Kansas City, Missouri, "the great and growing city of the West." Have never held any very important office. Was appointed by three successive Democratic administrations city physician. Was unanimously nominated by a Democratic convention for the position of mayor. Fortunately, or unfortunately, "was left." Have rather shunned the political arena, and have applied myself closely to business. Held the chair of professor of materia medica and therapeutics in the Kansas City Medical College. Am a member of the Grand Army of the Republic, and of the Military Order of the Loyal Legion of the United States. In 1889, with my wife, visited Europe; visited the hospitals of Glasgow, London and Paris. Had the pleasure of taking by the hand the great Pasteur, at his institute that was erected and donated to him by the city of Paris.

In 1863 was married to Miss Mary R. Sherrill, of Geneva, New York, daughter of the late Colonel Sherrill, who fell mortally wounded at that sanguinary battle of Gettysburg. A monument to his memory has been

erected on that fatal spot. Unto us was born one child, which died in infancy. Have gained a competency of nearly one million dollars. What little success I have made in life I attribute, in a great measure, to the early medical training which I received at the Albany Medical College. I therefore prize highly my *alma mater*, and as a further evidence of my love and esteem for this Alumni Association, I hereby enclose my check for fifty dollars, as a contribution towards defraying the expense of the banquet which, I presume, will follow this meeting, and I will ask Dr. Davis, historian, to drink for me the following toast: May the faculty and officers of the Albany Medical College and this Alumni Association *live long and be happy*

May we all meet in Heaven.

D. ESTAING DICKERSON, M. D.,
Historian of the Class of '57.

No report was received from the class of '67.

Dr. Barker presented the following report as class historian of '77:

REPORT OF THE CLASS OF '77. DR. JAMES F. BARKER.

Mr. President and Fellow Alumni:

In reviewing the history of the class of 1877, I find that the class occupies a position somewhat distinctive from classes that have graduated before or since, inasmuch as it was the first class to graduate after the reorganization of the faculty of the college, a period that marked the change from the old *régime* to the new. It was also the first class to pass a written instead of an oral examination as one of the requirements for graduation.

The graduating exercises were held on the evening of January 31st, 1877, at Tweddle Hall (now Tweddle Building), some six weeks later than they had been held during other years, owing to the lengthening of the term, or session, from four to five months. The exercises were of a very interesting character. The address to the class was delivered by the late Dr. Thomas Hun, dean of the faculty; the valedictory address by John A. Crowley, of Vermont, and the essay by Horace T. Sprague, of Albany, both now deceased.

The class numbered thirty-seven members, of whom fourteen have since died. Of the number now living sixteen are practicing in the State of New York, one in Dakota, one in Illinois, one in Wisconsin, one in Washington, D. C.; one in Massachusetts, one in Ohio, and one whose address is unknown. As far as heard from, all report a fair amount of success in their chosen profession.

Dr. Jesse Crounse, of Altamont, New York, writes:

My Dear Doctor: And so twenty years have elapsed since we emerged from our *alma mater*, with the congratulations of the faculty in our ears, our diplomas in our hands, and the world before us. It seems hardly pos-

sible. So rapidly has the busy years followed each other that it seems but yesterday that we "hung out our shingles," and decided to give the world the benefit of our accumulated medical wisdom in good, generous allopathic doses. Three things you wish to know—Who am I? Where am I? and What am I? To the first I reply, My first great aim in life is to be a man in the best and noblest sense of the term. To the second, immediately after receiving my diploma I located at Altamont, New York, where I am to-day, and where twenty busy, happy and, I can truthfully say, not unprofitable years have passed away. I am a member of the Albany County Medical Society, and in 1881 was a delegate to the American Medical Association. Socially, I am blessed perhaps beyond my deserts, but I can wish nothing better for my classmates of '77 than the peace and happiness which are mine.

Dr. Thomas Featherstonhaugh, of Washington, D. C., says:

Dear Doctor: You know I practiced in both Albany and New York for some years, and then, in the interest of my health, came to Washington, where I am the so-called medical referee of the pension system. I have interested myself in prehistoric anthropology, and have made several trips to Florida, where I have opened several mounds of the mound builders. I served in the capacity of historian for our class ten years ago, and I well remember the large number of deaths that I had to report. Doubtless your list will be even larger.

Dr. Charles McCulloch, of Gloversville, New York, writes:

Dear Doctor: I resided at Central Bridge, Schoharie County, until June, 1893; then moved to Gloversville, Fulton County, where I am now practicing.

He also writes that he has a son in the present graduating class.

Dr. William J. Donald, Tunnel City, Wisconsin:

My Dear Doctor: Shortly after graduating I returned to the West, and practiced at Mount Vernon, Dane County, Wisconsin, until February, 1880, when I changed my field to Tunnel City, where I still reside.

Dr. A. J. Pitts, of New York City: After graduating I settled in Pittsburg, Pa., where I remained one year; then moved to New York City, where I am still, and enjoying a lucrative practice.

Dr. Russell, of Poughkeepsie: Your request for a sketch of my life since graduation wakes me up from a Van Winklian sleep, and I am reminded chiefly of the fact that time flies. After graduation I entered the Albany Hospital as house physician. In 1879 I accepted an appointment on the Utica Hospital staff. In 1882 went to Europe for study and travel. On my return, in 1884, entered into partnership with Dr. Ward, of Albany, and afterwards opened an independent office of my own on Lancaster street, where I continued until 1888, when I made a circuit of the world. In January, 1891, I accepted a position of first assistant at the New York State Hospital, at Poughkeepsie, and filled it for nearly two

years, when, on account of poor health, was obliged to resign, but continued in the practice of the profession in this locality where I still reside.

Dr. James Warwick, of Worcester, Mass.: I can assure you that I was pleased to hear from one who, twenty years ago, attended the old Albany Medical College, and listened to its kind and able professors. I left Troy, New York, in 1884, and went to England, where I remained until 1886. On my return, I located in Massachusetts, practicing in Boston, Hudson, and for the last five years in the city of Worcester. I am 54 years of age, and enjoy the best of health.

Dr. F. P. Blair: In March, 1878, I located in Barton, Tioga County, a little village on the Susquehanna River, where I remained eight years, meeting with, I believe, fair success in my profession. In June, 1886, I bought a practice in Allegany, Cattaraugus County, where I have since resided, and where for the present I am very well satisfied to remain. Married, but have no children.

Dr. Lown, of Findlay, Ohio: After leaving college I practiced until 1884 at Richville, New York; then was offered the position of surgeon to H. R. O. & I. Co., near Hudson, New York, where I remained four years, and then came to Findlay, where I have since remained. My income has always furnished all our wants, and many of the luxuries of life.

JAMES F. BARKER,
Historian of the Class '77.

Dr. Bissell presented the following report as class historian of '87:

REPORT OF THE CLASS OF '87. DR. JAMES H. BISSELL.

Mr. President and Gentlemen:

According to time-honored custom, we are assembled in annual reunion to celebrate the event of our graduation, and to make note of the revolution of the wheels of time, for the mills of the gods have been grinding, and of the grist of years of our professional experience ten have already run through the hopper of time since our class was added to the honorable list of members of the A. M. C. Alumni, and it becomes my pleasant privilege to record, and to report to you, the record of the same.

It is with feelings of pride for our *alma mater*, and for our faithful professors, who labored for our advancement as students, that I shall read to you the history of the members of the class of '87, for success has attended nearly all of our number.

Of the 38 members who graduated, 24 have responded to my letters of inquiry.

Dr. Eugene M. Austin writes: I have been practicing medicine at Tupper Lake for seven years, the home for consumptives, the coming

health resort for the Eastern States. Am contented, doing well, and am happy.

Dr. Henry T. Brooks is located in New York City. He modestly says: I have very little to say of myself. I am married, and that is something. Am doing fairly well, and am connected with the Post-Graduate School and Hospital. I fully expect to be present at the reunion.

Dr. Charles M. Bradley writes that he has practiced medicine in a number of different States; spent considerable time in traveling through the West with the object of securing a favorable location. After a number of fairly successful trials, he has finally located at Decatur, Ill., where he manages to make a living, and intends to permanently remain.

Dr. William W. Broga enjoys a very good practice at Springfield, Mass.

Dr. Peter G. Cotter writes an interesting letter from Yuma, Arizona, in which he says: After graduation he served as interne at St. Peter's Hospital, Albany, until October, 1887, when he accepted an appointment as physician to the Fort Yuma Indian School, at which place he served until April, 1890. He then purchased the practice and drug store of one of Yuma's physicians, and has been successful both as druggist and physician. He has served four years as physician to the Territorial Prison, located at Yuma, also two terms as county physician of Yuma County. Has been a member of the Arizona Medical Association since it organized, in 1891, and was elected its fourth president. On February 5, '96, he was married to a Miss Elizabeth L. Mackenzie, of San Jose, Cal. He says: I shall be with you in spirit at the reunion in 1897, and extend to our dear *alma mater*, her professors and to the members of the class of '87 my sincerest and best wishes.

Dr. Cornelius W. De Baun says: Immediately after graduating I located at Fultonville, N. Y. In May of the same year I was married to Miss Laura Mills, daughter of the late G. F. Mills, of Fonda. In 1888 I succeeded to the practice of my preceptor, Dr. F. G. Buckbee, at Fonda, and have been here ever since, having enjoyed a good practice. Have served one term as coroner, and am now serving another term, having been elected at the McKinley election by over 2,000 majority. I have also served two years as delegate to the State Medical Society from the Montgomery County Medical Society, of which latter I was secretary and treasurer for a number of years. I have one son, seven years old. I trust that on the 20th of April we may have the pleasure of meeting the greater number of our class, and of hearing of the success of all.

Fortune has favored our classmate, Dr. M. Francis Drury, who, after graduating, spent a year as interne physician at St. Peter's Hospital, in Albany, after which he went to Amsterdam, N. Y., where, as he says, he became sick from eating too freely of the bird known as the American crow, and accordingly removed to Broadalbin, N. Y., his former home, where he still remains to conduct a nice practice. In the year of 1890 he

married one of Gloversville's fairest young ladies, with whom he is still spending a honeymoon. With prosperity now pouring for him from the golden horn of plenty, he is contented and happy.

Dr. Robert E. Fivey is practicing medicine at No. 155 Seventy-second street, New York, and, I understand, is doing well.

Dr. E. L. Fletcher writes from Augusta, Wisconsin, as follows: After leaving the A. M. C. in '87, I went at once to practice with an old physician, Dr. G. R. Martin, of Glens Falls, N. Y., remaining there one year; then came West, and began work with Dr. D. W. Day, of Eau Claire, Wis. With him I remained until August, 1889, when I came to my present place of business, Augusta, Wis., where I have since remained. My work through all these years has been unusually successful, both professionally and financially. I am in hopes of being able to leave my work the coming summer and take a special course in Germany. The eye and ear will receive my whole attention, and after I have fully prepared myself I expect to remove to one of your larger Eastern cities.

Dr. M. D. French has hung out his shingle in three different places. He writes: I first located in North Colesville, Broome County, N. Y. After practicing there for seven years, and wishing to extend my practice, I removed to West Chazy, Clinton County, only to move again, after six months' practice, to Lebanon, Madison County, N. Y., where I now reside. I have a pleasant home and remunerative practice. Was appointed health officer in this place two years ago, which position I still hold. I extend greetings to my *alma mater*, and best wishes to the class of '87.

Dr. John Heatly says: After looking over several New England towns, he finally settled in his native city, viz., Schenectady, N. Y., of which place he has been city physician for two years and county physician for two years. Was on the staff of the Schenectady Hospital and Dispensary for four years, and is now a member of the staff of Ellis Hospital, and a visiting physician to the Children's Home. He enjoys a good practice, and has never married.

Dr. G. L. Hogan is located in Bozeman, Montana, and is doing well.

Dr. R. J. Hogan has settled in Glens Falls, N. Y., where he has maintained the esteem of the community in which he resides, as is evinced by his large and steadily growing practice. He was married soon after graduation. He has had two daughters, one of whom died at the age of five. The other is now a beautiful girl of eight years.

The good ship of fortune has cast anchor at Mechanicville, N. Y., and our esteemed classmate, Dr. Arthur W. Johnson, finds ample reason to be thankful for the same. After graduation, the doctor says he entered the service of the New York Skin and Cancer Hospital, at the same time assisting at the Bellevue Dispensary and attending lectures at the Post-Graduate School and Hospital, after which he spent one year as surgeon on one of the ships of the United States and Brazil Steamship Company;

traveled two years in the Western States; then located for a short time at Hulberton, N. Y., and afterwards for six months at Saratoga. About this time his father's health began to fail, when he left Saratoga for Greenfield Centre, N. Y., to commence a partnership practice with his father. After about two years he removed to Mechanicville, N. Y., where he has permanently located. In 1894 he married Miss Katherine E. Sturtevant, of that place. He has the honor of being past master of St. John's Lodge No. 22, F. and A. M., and has enjoyed a number of political honors.

Our old friend and classmate, Dr. E. M. Jones, located at Grafton Centre, where he remained for several years, when he removed to Petersburg, N. Y. Not being contented there, he returned to his old practice among his Grafton hills. With characteristic humor he writes that, isolated as he is by distance from medical societies and professional associates, he realizes that his professional back is becoming covered with moss, thus disproving the adage of the rolling stone. The doctor is not given to self-praise, but I understand that he has a good practice, and he writes that he is enjoying the comforts of life.

I have received no communication from Dr. Owen F. McAvenue, but I saw him not long since in Albany, where he told me he is practicing medicine, and doing very well.

The history of the professional career of Dr. Willis G. MacDonald is one of which our class may well be proud. An unusual degree of success has attended him during the past ten years. In 1890 he took a special course in medicine in Europe, remaining about one year. Upon his return he resumed practice at his present location, No. 27 Eagle street, Albany. He is visiting surgeon to the Albany City Hospital, and is assistant professor of surgery in the Albany Medical College.

Dr. Andrew MacFarlane is located at No. 24 South Hawk street, Albany. He is clinical professor of physical diagnosis and microscopy in the Albany Medical College, and though he has not written me, I believe he is doing well.

Dr. George H. McMurry is located at Glens Falls, N. Y., and is prosperous.

Dr. Webster Miller writes from Stockbridge, Mass.: My experience has not been other than ordinary. I located here after graduating. The field is not large, and there is an active competition, though I have been able to command my share of patronage. Am not married. I hope to be present at the reunion, and to hear from all of our class.

Dr. W. I. Gordon writes: Four days after graduation myself and wife located at Copake, Columbia County, N. Y., where I enjoyed a good practice until one year ago, when my health became impaired. I sold my practice, and have been unable to practice much this past year, therefore have now no permanent location, but anticipate beginning in a new place as soon as a favorable location can be found. Five years ago the Columbia County Medical Society made me its president, and two years

ago I became eligible for membership in the State Medical Society, and joined the same.

Dr. H. F. C. Müller says: Shortly after graduation I located in Rensselaerville, N. Y. After three and a half years' practice there I took a post-graduate course in New York City. In 1889 I married Miss M. W. Gough, of Brooklyn. We have two beautiful children, of whom we are proud. In 1890 I located in Brooklyn, and have now a flourishing practice. Am member of the Kings County Medical Society, Brooklyn Pathological Society, and the A. M. C. Alumni Association of Greater New York.

Dr. J. E. Sadlier says: As you all know, after receiving my diploma March, 1887, I was appointed as one of the resident physicians of the Albany Hospital. As I would not go on duty in that institution until September, I had the chance to spend six months awaiting my turn. During that time I did not practice. I entered the Albany Hospital during the month of September, and served for eighteen months as one of the resident physicians, and have ever since had occasion to feel that I was well repaid in practical experience for the time spent in the hospital. In fact, I hardly know how I could have succeeded in the practice of medicine and surgery had it not been for that practical experience.

I left Albany for good April of 1889, and May 1st of the same year I located in Poughkeepsie, N. Y., where I now am. As is the case with most young physicians, I found plenty of time to wait for patients and to read my text-books during the first few months. But I have had no occasion to regret having located in this city, for I consider that I have had a full measure of success, even more than I could have anticipated. During July of 1891, I was appointed one of the attending physicians at Vassar Brothers' Hospital, of this city, which place I still hold.

June 18, 1891, I was married to Hattie Crawford Millspaugh, of Waldon, N. Y. Have no children.

For six years previous to January, 1897, I served as secretary of the Dutchess County Medical Society, and was relieved of that position when the society honored me by electing me as delegate to the New York State Medical Society.

July, 1894, I was appointed a member of the Board of Examining Surgeons for the United States Pension Department, located at Poughkeepsie, N. Y., and for two years served as secretary of our Board, and then, upon the death of our president, Dr. Edward H. Parker, I was selected to fill the position of president of the board, which office I still hold.

As yet I am a general practitioner, having adopted no specialty.

I am fraternally yours,

J. E. SADLIER, M. D.,
295 Mill Street,
Poughkeepsie, N. Y.

Dr. Charles H. Moore communicates as follows: After graduation, my first two years were spent partly in general practice in Albany, my native city, and partly in special study in relation to the eye and ear in New York City. In 1889 I entered the office of Dr. C. S. Merrill, of Albany, since which time I have been associated with him in practice. I am married, and have had one child, a son, who was spared to me but little over one year. I trust you will be able to hear favorable reports from the entire class of '87. Many of our number, I notice, have done remarkably well.

Dr. Herman Mynderse is in Schenectady, N. Y., succeeding to his father's practice, and is successful. Dr. Mynderse is a large owner of real estate; is a bank director, and a member of the Board of Education in his city.

Dr. Clarence M. Paine is located at 67 North Forsyth street, Atlanta, Georgia.

Dr. Robert J. Palmer briefly writes: After leaving college I located at Amsterdam, N. Y.; remained there but one year; then came to Gloversville, N. Y., where I have a good practice. Have been health officer of the city, and hold the office of coroner at the present time.

Dr. Henry J. Potter is located at Bennington, Vt.

Dr. Henry Z. Pratt has located at Greenbush Heights, N. Y., where he has established a well-appointed sanitarium. The doctor has practiced medicine in New York City, but finds the treatment of patients in his private sanitarium more congenial to his taste.

Dr. George K. Smith is in Richmondville, Schoharie County, N. Y. He has sent no communication, but from other sources I understand he is prosperous.

Dr. Francis W. St. John has permanently located at Charlton, N. Y. In his communication to me he says: After graduation I located at Batchellerville, N. Y.; remained there six months, and removed to Eagle Mills, N. Y. From there, after one year's practice, I moved to East Galway, N. Y. In January, 1891, an opening occurred at my present location, at Charlton, where I have a good practice, and am contented.

Dr. Charles Van Wert, who is located at No. 115 Ninety-seventh street, New York City, says he has nothing to complain of. He settled in his present location soon after graduation, and thinks he settled in the right spot at the right time. He has as large a practice as any physician in that portion of the city, but says he has the usual complaint to make of hard times. He has just returned from a pleasure trip to Florida, which fact indicates that the hard times have not quite depleted his pocket.

Dr. Thomas H. Willard's history is replete with success. He writes from New York the following account of himself, viz.: During the time I was at the Albany Medical College I held a government position in the post-office under my preceptor, Dr. D. V. O'Leary (A. M. C., '66). I remained in the post-office after graduation as assistant postmaster, and

was relieved of public service in the fall of '89. Opened an office, and in the fall of 1890 was made medical examiner of the Metropolitan Life Insurance Company, of New York, which position I have since occupied with great satisfaction to myself, if not to my associates. Was married in November, 1889, to Jessie W. Hayes, of Albany. We have one child, a boy.

Dr. Henry C. Young is located at Hagaman's Mills, Montgomery County, N. Y., but have received no communication from him.

As for myself, I may add that I have not been forgotten by the Giver of all good things of this world. I have a good wife, a pleasant home, and a patronage of which I have no reason to complain. I am a member of the Rensselaer County Medical Society, the New York State Medical Association, the Union Medical Society, and the Anglo-Austrian Medical Association. In the years of 1893-4 I spent a time very profitably studying in the hospitals of Berlin and Vienna. Upon my return I resumed the practice of medicine at my old office, in Troy, where I expect to remain.

While we are rejoiced over the success that has attended each through all these years, our hearts are saddened by the knowledge that two of our number are missing. Two have been called to council with the Great Physician, in that world where bodily sickness and suffering end.

On August 6th of 1896, Dr. John Spencer Phillips died at Gloversville, N. Y., and Dr. George F. Palmer has succumbed to the dread disease, tuberculosis. His father writes: At the term in which he graduated I found him quite ill, the condition finally developing into tubercular disease, but soon improved and associated with me, he took up the practice of medicine, and showed unusual aptness in his work. After a few years he concluded to try the effect of a change of climate, and spent a winter in Middle Georgia, and was much improved in health. Two years ago he went with his wife to California, expecting to make a home there. The change of climate and fatigue of travel were more than he could endure, when death came suddenly and unexpectedly. He was one of the brightest young men I ever knew at the bedside, and early showed tact in surgery, and during his short professional life had done quite a number of delicate and difficult operations, and was uniformly successful. I was proud of him, and often thought with gratitude of the training he had received at the hands of the faculty of the A. M. C., all of whom were my personal friends. His death was so great a shock to his mother as to cause her death, and I have laid them side by side in the village where he was born. In him the profession has lost a great deal, for in his lifetime he was loving, loyal and manly.

This, gentlemen of the class of '87, concludes your historian's record for the past decade. The responsibilities of professional life have been ably and manfully met. Our prophet's predictions have been verified, and the continual feast of contented minds which prosperity ever brings is our reward.

J. H. BISSELL,
Historian A. M. C., '87.

On motion, the thanks of the association were tendered to the historian and class historians for their interesting reports.

The recording secretary read the following:

NECROLOGY.

Dr. Thomas Hun (hon.), at Albany, June 23, 1896, aet. 87.

Dr. Peter A. Brumagim ('44), at Scotch Bush, N. Y., April 17, 1897, aet. 81.

Dr. Thomas S. Dawes ('48), at Saugerties, N. Y., April 11, 1897, aet. 75.

Dr. James W. Cox ('52), at Albany, June 9, 1896, aet. 67.

Dr. George E. Benson ('53), at Hudson, N. Y.

Dr. William H. Woodruff ('54), at Pine Bush, N. Y., November 30, 1896, aet. 65.

Dr. J. Ralsey White ('55), at Brooklyn, March 8, 1897, act. 67.

Dr. Henry K. Clarke ('62), at Battle Creek, Mich., December 4, 1896.

Dr. Harvey W. Bell ('66), died in February, 1897.

Dr. Ross Wilson ('70), at Chicago, August 21, 1896, aet. 47.

Dr. Alonzo Churchill ('74), at Utica, N. Y., December 28, 1896, aet. 85.

Dr. Arthur G. Kenney ('77), at Watervliet, N. Y., June 27, 1896.

Dr. Kenyon A. Bushnell ('79), at Little Falls, N. Y., December 23, 1896, aet. 40.

Dr. Frederick D. Morrill ('81), at Albany, January 1, 1897.

Dr. John S. Phillips ('87), at Gloversville, N. Y., August 6, 1896.

Dr. David J. Barry ('88), at Schenectady, N. Y.

Dr. Adelbert W. Witter ('88), at Quaker Street, N. Y., August 26, 1896, aet. 34.

Dr. James F. Earley ('90), at Albany, November 26, 1896, aet. 33.

Dr. Edward A. Hoffman ('91), at Albany, December 1, 1896, act. 30.

The committee appointed to nominate officers presented the following report, which was read by its chairman, Dr. J. V. Hennessy:

For President,

DR. HAMBLIN B. MABEN ('57), Kingston, N. Y.

For Vice-Presidents,

DR. JOHN A. CUTTER ('86), New York City.
DR. WILLIAM MORGAN ('69), Albany, N. Y.
DR. HENRY F. C. MÜLLER ('87), Brooklyn, N. Y.
DR. JOHN K. THORNE ('71), Gloversville, N. Y.
DR. H. SHELDEN EDSON ('77), Cortland, N. Y.

For Recording Secretary,

DR. WILLIS G. TUCKER ('70), Albany, N. Y.

[At a meeting of the executive committee, held May 13, 1897, Dr. Tucker resigned the office of recording secretary, and Dr. J. M. Mosher ('89) was chosen to fill the vacancy thus created.]

For Corresponding Secretary,
DR. JOHN BEN. STONEHOUSE ('71), Albany, N. Y.

For Treasurer,
DR. THEODORE F. C. VAN ALLEN ('83), Albany, N. Y.

For Historian,
DR. CHARLES E. DAVIS ('91), Albany, N. Y.

For Members of Executive Committee (term three years),
DR. DANIEL H. COOK ('73), Albany, N. Y.
DR. ANDREW MACFARLANE ('87), Albany, N. Y.
DR. WILLIAM J. NELLIS ('79), Albany, N. Y.
DR. WILLIAM B. SABIN ('82), Watervliet, N. Y.

On motion of Dr. D. H. Cook, the report was accepted and adopted, and the recording secretary was instructed to cast a ballot on behalf of the association for the gentlemen named therein. This having been done, those named in the report were declared by the president duly elected officers of the association for their respective terms.

The corresponding secretary, Dr. J. B. Stonehouse, read letters from the following members of the association unable to be present: Drs. R. Ottman, ('44); H. D. Didama ('46); G. W. Chittenden ('46); L. Traver ('57); J. J. Van Rensselaer ('59); J. P. Shumway ('60); H. T. Hanks ('61); E. V. Stoddard ('63); A. T. Veeder ('63); J. P. Kimball ('64); T. P. Graham ('65); D. Norwood ('67); E. W. Dutcher ('70); H. L. Cookingham ('71); J. F. Force ('71); W. Hillegas ('81); H. R. Powell ('82); L. C. Hubbard ('82). He also acknowledged the receipt of photographs from the following alumni: Drs. R. Ottman ('44); G. W. Chittenden ('46); L. McLean ('56); J. P. Shumway ('60); E. J. Wood ('65); X. T. Bates ('67); I. C. Schureman ('69); E. S. Willard ('80); H. R. Powell ('82); T. F. C. Van Allen ('82); H. Hollidey ('84).

Dr. Maben, President-elect, was introduced to the association

and thanked the members present for the honor conferred upon him, and assured them of his desire to do all in his power to promote the prosperity of the association.

After the announcement of the order of exercises for the afternoon and evening, no other business appearing, the meeting adjourned.

BENDER LABORATORY RECEPTION.

The afternoon of Alumni day was devoted to a reception at the Bender Hygienic Laboratory, on Lake avenue. In this building the laboratory work of the college in histology, pathological anatomy and bacteriology is conducted. It was erected by Matthew W. Bender of Albany and furnished and equipped by the college, and was formally dedicated October 27, 1896. A reception committee from the executive committee of the association was present and introduced the alumni as they arrived to the representatives of the Bender Laboratory trustees, the faculty, and the Alumni Association. A collation was served in the upper laboratory, and the afternoon was pleasantly spent by the alumni, of whom about one hundred and fifty were present, in inspecting the building and its varied facilities for imparting instruction and conducting scientific research, and in social intercourse with each other. Notice of the reception, which, this year, was substituted by the executive committee for the annual dinner for reasons stated in their report presented at the annual meeting, had been sent to all members of the association, who were cordially invited to be present, and the fact that they attended in such large numbers would seem to indicate that the decision of the committee was a wise one, and that the innovation met with the approval of the alumni.

COMMENCEMENT EXERCISES.

The sixty-sixth commencement exercises of the Albany Medical College were held at Odd Fellows' Hall, on Tuesday evening, April 20, 1897, at eight o'clock, in the presence of a large audience. Dr. A. V. V. Raymond, president of Union University, presided, and upon the stage were seated the members of the faculty, officers of the Alumni Association and prominent citizens.

The following was the order of exercises:

Overture — "Jupiter," - - - - - - - - - - - *Hoffman*

Prayer — Rev. EDWARD G. SELDEN, D. D.

Music — SELECTION: "Wizard of the Nile," - - - - - *Herbert*

Essay — REUBEN HAYES IRISH.

Music — AIR DE BALLET: "Daphne," - - - - - - - *Puerner*

CONFERRING DEGREES

BY ANDREW VAN VRANKEN RAYMOND, D. D., LL. D.,
President of Union University.

Music — SEXTETTE: "Lucia," - - - - - - - - - *Donizetti*

Address — Rt. Rev. W. C. DOANE, D. D., S. T. D.

Music — IDYL: "On Tip-Toe," - - - - - - - - - *Hosmer*

Valedictory — RICHARD VAN BEUSEKOM, JR.

Music — VALSE DE SALON: "Bonheur Perdu," - - - - - *Gillet*

REPORT ON PRIZES AND APPOINTMENTS.

Benediction — Rev. JOHN GIFFEN, M. D.

Music — TWO STEP: "King Carnival," - - - - - - - *Rosey*

The graduating class was as follows:

IRA APPLEBEE	Albany, N. Y.
THOMAS JOSEPH ARUNDEL	Auburn, N. Y.
EUGENE WILLIAM BALTES	Oswego, N. Y.
HARRY EDWIN BATTIN	Watervliet, N. Y.
JOHN JACOB BEARD	Cobleskill, N. Y.
EDWARD WATERBURY BECKER	Watervliet, N. Y.
CHARLES HEALD BENNETT	Auburn, N. Y.
EDWARD NICHOLSON BIBBY	Glens Falls, N. Y.
HERBERT OSCAR BRUST	Cropseyville, N. Y.
CHARLES GRAY COLE	Binghamton, N. Y.
JOSEPH GILBERT COLEMAN	Goshen, N. Y.
SANDERS PETER CORNELL	Middlefield, N. Y.
WILLIAM CLAPP CUTHBERT	Fort Edward, N. Y.
ROBERT CALHOUN DAVIES	Holland Patent, N. Y.
JOHN WYMAN DEAN	Pattens Mills, N. Y.
ROBERT LINCOLN ELLITHORP	Johnstown, N. Y.
CALVIN EMERICK	West Camp, N. Y.
JOHN HENRY FALLON	Greenbush, N. Y.
WILLIAM LEWIS FODDER	Cohoes, N. Y.
EDWARD LEO GAUS, Ph. G.	Albany, N. Y.
JOHN GIFFEN	Albany, N. Y.
WALTER SCOTT GRAHAM	Troy, N. Y.
FREDERICK HOWELL GREENE	West Laurens, N. Y.

LEWIS THEOPILUS GRIFFITH - - - - - - - - Troy, N. Y.
WILLIAM CHURCH GRISWOLD, Ph. G. - - - - Whitehall, N. Y.
FRED NEWMAN GUYER - - - - - - - - - Albany, N. Y.
EUGENE JOSEPH HANRATTA - - - - - - - Watervliet, N. Y.
REUBEN LEO HOWLAND - - - - - - - Gloversville, N. Y.
REUBEN HAYES IRISH - - - - - - - - Elizabethtown, N. Y.
HERMAN WILCOMIR KATZ - - - - - - - Brooklyn, N. Y.
PETER HERMAN KEELER, Ph. G. - - - - - Albany, N. Y.
BUEL LATCHER - - - - - - - - - Edinburg, N. Y.
MARSHALL LATCHER - - - - - - - - - Edinburg, N. Y.
FRED C. LEONARD - - - - - - - - - Worcester, N. Y.
WILLIAM GEORGE LEWIS - - - - - - - West Schuyler, N. Y.
HARRY JUDSON LIPES - - - - - - - - - Albany, N. Y.
FRED MARKLE - - - - - - - - - - Albany, N. Y.
LEONARD MCCLINTOCK, A. B. - - - - South Worcester, N. Y.
EDWARD FRANCIS MCCORMACK - - - - - - - Troy, N. Y.
WILLIAM C. MCCULLOCH - - - - - - - Gloversville, N. Y.
FRANCIS JAMES MCKOWN - - - - - - Slingerlands, N. Y.
HARRY ALVIN MERCHANT - - - - - - - Monson, Mass.
GEORGE COE MERRIMAN - - - - - - - - Scranton, Pa.
JAMES JOSEPH NOONAN - - - - - - - - Cohoes, N. Y.
JOSEPH ALLAN O'NEILL - - - - - - - Schenectady, N. Y.
ALLEN MONROE OTTMAN - - - - - - - - Delmar, N. Y.
PAYN BIGELOW PARSONS, A. B. - - - - Williamstown, Mass.
GEORGE BURTON PEARSON - - - - - - - Boston, Mass.
CHARLES HARPER RICHARDSON - - - - - San Francisco, Cal.
ANDREW JOSEPH RONAN - - - - - - - - Albany, N. Y.
GEORGE EUGENE SCHOOLCRAFT - - - - - Gallupville, N. Y.
WILLIAM JOHN SHEEHAN - - - - - - Victory Mills, N. Y.
WILLIAM ETHELBERT SILCOCKS - - - - - - Cohoes, N. Y.
CLARENCE JONATHAN SLOCUM - - - - - La Fayette, R. I.
JOHN ARCHIBOLD STEVENSON - - - - - - Albany, N. Y.
GARRETT WARREN TIMMERS - - - - - - - Albany, N. Y.
JOHN WILLARD TRAVELL, A. B. - - - - - - Troy, N. Y.
RICHARD VAN BEUSEKOM, JR., A. B. - - - McKownsville, N. Y.
CHARLES NICHOLAS VAN DENBERGE - - - - Schenectady, N. Y.
DELBERT WILBUR - - - - - - - - - Naples, N. Y.

The registrar presented the prizes. He first read a report on the Vanderpoel prize, endowed by Mrs. Gertrude W. Vanderpoel, in memory of her husband, the late S. Oakley Vanderpoel, M. D., for many years a professor in the college, stating this prize, consisting of a clinical microscope and accessories, offered to the senior student passing the best bedside examination in general medicine, had been awarded to Dr. Reuben H. Irish; and that at the competitive examination for hospi-

tal positions, the following appointments had been made: Albany Hospital, Drs. R. H. Irish, F. J. McKown and Marshall Latcher; St. Peter's Hospital, Drs. F. N. Guyer and G. E. Schoolcraft; Ellis Hospital, Schenectady, Dr. Buel Latcher.

The prize of fifty dollars, offered by Dr. Vander Veer for the best report of the surgical clinics was awarded to Dr. H. J. Lipes, and that offered by Drs. Hailes and Morrow for the second best report was awarded to Dr. W. G. Lewis, with honorable mention of Dr. Ira Applebee.

The prize consisting of an ophthalmoscope, offered by Dr. Merrill, for the best report of the eye and ear clinics, was awarded to Dr. H. J. Lipes.

The Townsend physiological prize, endowed by the late Professor Franklin Townsend, Jr., M. D., was awarded to Mr. Christian G. Hacker, for passing the best examination in physiology at the end of his first year of study.

Dr. Boyd's prize to the student passing the best final examination in obstetrics was awarded to Dr. R. H. Irish.

The prize consisting of a case of surgical instruments, offered to the senior student passing the best final examination, by Dr. T. W. Nellis, was awarded to Dr. R. H. Irish.

The prize offered by Dr. H. R. Powell to the second-year student passing the best final examination, consisting of a general operating case, was awarded to Mr. Emmott Howd.

A prize consisting of Gross' complete pocket case of instruments, offered by A. B. Huested & Co. to the first-year student passing the best final examination, was awarded to Mr. Christian G. Hacker.

Class appointments for '98 were announced as follows: Essayist, Emmott Howd; alternate, David J. Jenkins.

TWELFTH INTERNATIONAL MEDICAL CONGRESS. — The Chairman of the American National Committee, Dr. Jacobi, has issued a circular of information, from which the following is extracted:

"In a letter dated Moscow, February 14th, the secretary-general, Prof. W. K. Roth, communicates the following facts for the information of the American physicians who intend to participate in the Twelfth International Congress, which is to be held at Moscow from August 19th to 26th.

" The transatlantic steamship companies refuse one and all any reduction of the usual charges.

" Reductions of fares on Russian railroads are expected shortly. The French, Spanish, Swedish and Hungarian railroads promise a reduction of 50 per cent.; so do the Italian for a distance of 500 kilometres; less (down to 30 per cent.) for shorter distances. The Mediterranean lines (Messageries Maritimes, General Italian Navigation Company, Austrian Lloyd) grant from 25 to 50 per cent.

" The undersigned chairman is not authorized to isue certificates of any kind in favor of congressists. He will try to ascertain, however, in which way their movements may be facilitated, and may receive a reply in the second half of April. Extracts of papers to be read before any of the sections ought to reach the secretary-general before June 1st in order to be printed in the preliminary volume.

" A special prospectus containing the final details referring to traveling, lodging, festivities, etc., is promised for a near future. It will be communicated at once to the medical journals, and to the press of the country."

—The College of Physicians and Surgeons, of Chicago, has recently become the Medical School of the University of Illinois.

—Dr. A. W. Wilmarth, '79, has removed from the State Hospital for the Insane at Norristown, Penn., to the State Home for the Feeble Minded, Chippewa Falls, Wisconsin.

—At the annual meeting of the Medical Society of the County of Albany, held Tuesday, May 11, 1897, the following officers were elected for the ensuing year: President, Dr. J. V. Hennessy; vice-president, Dr. T. L. Carroll; secretary, Drs. James W. Wiltse; treasurer, Dr. W. H. Happel; censors, Drs. F. C. Curtis, H. Bendell, J. D. Craig, W. L. Schutter, E. A. Bartlett.

Obituary.

LE ROY MCLEAN.

In the death of Dr. Le Roy McLean, of Troy, N. Y., the medical fraternity has lost a surgeon whose achievements were

attained in times when pluck, energy and rare judgment were the foundation stones of success. Born of Scottish descent, in Washington county, on February 12th, 1830, Dr. McLean's early life and education were associated with that county. He began the study of medicine in 1853, occupying a position as interne at Marshall's Infirmary, Troy. He graduated at the Albany Medical College in 1855, and thereafter spent terms of service in the Albany Hospital, and again in Marshall's Infirmary. The years in these institutions were one continuous revelry in the study of anatomy, where, with opportunities for obtaining plenty of material, he made many dissections, and dry specimens of the human body. He thus became a lover of, and a skillful performer of, surgical operations. Upon the breaking out of the war he found opportunity for his devotion, and went at once into the field, first as assistant surgeon, then as surgeon of the Second N. Y. Vols. Many times he was detailed as chief operating surgeon at battles, and enjoyed the distinction of appointment as operating surgeon of an entire division. Many were his successes and difficult operations during the war, notably the first successful hip-joint amputation of the rebellion. During his service he had a six month's attack of chronic diarrhœa, reducing him to a mere shadow, but with characteristic determination he stuck to his post. Near the close of the war he became surgeon of the Twenty-fourth Regiment, and afterwards surgeon and colonel, on Maj.-Gen. Carr's staff. His subsequent thirty years of active practice in Troy was one triumphal march of a surgeon, and as such he had the unbounded confidence of a large section. He performed the first ovariotomy, with recovery, in this region, in which operation he was particularly successful. Although before Listerism, his large number of cases had above seventy per cent. recoveries. In œsophagotomy he was one of the earliest operators in this country, his first case being the removal of a tooth-plate embedded in the œsophagus for a number of weeks. He made upwards of a dozen of these operations without a single failure. The wonderful success that seemed to follow his work was no doubt due to the following factors: First, his early, persistent and careful study of anatomy, in theory and dissections; his constant study of medicine and surgery; and in this matter the fact, that of 800 volumes in his library, the

date of the beginning and the date of finishing reading the same can be seen on the fly-leaf of each and every book, and in some many times repeated, is proof of this. Throughout the pages of these volumes are underlinings and marginal notes, showing that he studied, not only read them. Another characteristic of his was, that no matter how many times he may have done a particular operation, or how familiar he may have been with the anatomy of the part, he never went to an important operation without giving the case careful study, and freshening his memory by tracing out the anatomical lines in his atlases. Dr. McLean was a man of rare judgment, honest to his convictions, conscientious in his undertakings, kind and painstaking in his duties, zealous, patient and God-fearing in his daily life. Those of us who enjoyed the rare privilege of his tutorage, and afterwards his intimate acquaintanceship, are justly proud of a preceptor whose earnest efforts to instruct, and whose counsel and interest in our subsequent career, never failed. At the time of his death Dr. McLean was the senior attending surgeon of the Troy Hospital, a member of the Loyal Legion and Army of the Potomac, of the Medical Society of the State of New York, American Medical Association, American Surgical Society, New York State Association of Railway Surgeons (honorary), Rensselaer County Medical Society (ex-president), and he was at the time of the retirement of the same one of the board of curators of the Albany Medical College. His last illness began in October, 1896, with a cerebral embolism, which resolved to some degree, but returned in February last with increasing severity, until, with gradually failing strength, he quietly passed away on April 23rd, 1897.

C. B. HERRICK ('80).

Book Reviews.

Diseases of the Stomach. By Dr. C. A. EWALD, Extraordinary Professor of Medicine at the University of Berlin. Translated and edited with numerous additions from the third German edition by MORRIS MANGES, A. M., M. D. Second revised edition. Pages, 602. New York: D. Appleton & Co., 1897.

In no field of medicine has there been, within recent years, any more constant attempt at exactitude of diagnosis than in diseases of the stomach. After Leube's introduction of the use of the stomach tube, the

microscope and test reagents have become the determining factors in diagnosis, which, up to that time, had been largely guesswork.

In this advance no one has done more to clear away the difficulties presented by gastric disorders than has Prof. Ewald. The fact that this is the second edition published in the United States indicates that the American practitioners appreciate its value.

The first hundred pages, about one-sixth of the volume, give the various methods of obtaining and examining the stomach contents. Contrary to most workers in special fields, the author conveys the cheering news that the examination of the stomach contents is within the scope of the general practitioner, and that the field of diseases of the stomach is too closely correlated to general systemic diseases to allow this branch to become a distinct specialty.

Chronic gastritis, the *bete noire* in classifications of gastric disorders, is divided in simple chronic gastritis, chronic mucous gastritis, and atrophy, each of which is readily differentiated from the others by the examination of the stomach contents.

Cancer of the stomach is very completely treated. The importance of the earliest possible diagnosis is recognized as surgical procedure to-day offers in suitable cases marked amelioration. The early pathognomonic symptoms are analyzed, and the conclusion reached is that the absence of hydrochloric acid and the presence of lactic acid, although highly presumptive, are not absolutely reliable.

The endeavor to attribute well-marked cases of neurasthenic agoraphobia to disorder of the stomach seems like confounding effect and cause, and certainly tends to disregard the neurosis which underlies so many functional disorders.

Too much praise cannot be bestowed upon the work of the translator. He has not only done well the work of translation, but by appending the views of other authorities upon disputed points, he has made the work almost encyclopædic in character.

Lectures on Appendicitis, and Notes on Other Subjects. By ROBERT T. MORRIS, A. M., M. D. Second edition, revised and enlarged. Pages, 169. New York and London: G. P. Putnam's Sons.

The chief interest of this book lies in the first half of it, which deals with appendicitis, and this portion is worthy of the attention of those physicians who still think it unnecessary to call a surgeon in consultation in an early stage of this disease. The views of the author on the subject of early operation are well known through recent discussion in journals, but his style is less dogmatic in this book than in his articles written in the heat of controversy.

Aseptic treatment is first dealt with, and then the anatomy and pathology of the appendix are considered, attention being called to the special liability of obstruction to its blood supply through the involvement of its single artery. Colon bacilli are held responsible for cases with serious symptoms, but with little or no rise in temperature, which is considered

as a symptom of little importance. Catarrhal colitis, with involvement of the appendix, is differentiated by Dr. Morris from infective appendicitis, and is not operated upon by him. He has not seen catarrhal appendicitis when operating, and considers the condition generally called such to be a stage of infective appendicitis.

The main reasons for insisting on an early operation are those recognized by most surgeons, namely, the larger recovery rate, and the freedom from further attacks, and the fact that it is impossible to make a prognosis in any given case if it is to be treated by medicine.

In describing the surgical treatment of appendicitis, the author considers an inch and one-half incision large enough for early and interval cases, and only makes a longer one in cases with widespread infection. He claims that the smaller the incision the less is the shock, and the more rapid the recovery, and the less the chance of hernia. The special technique required by the inch and one-half incision is described, and the use of a "guy-line" through the aponeuroses of the transversalis and internal oblique muscles, and through the transversalis fascia and peritoneum is considered absolutely essential.

The question of the removal of the appendix in cases where there is a walled-in abscess is left to the judgment of the operator, according to the prevailing opinion among surgeons. When drainage is necessary, a wick of sterilized gauze, rolled in rubber tissue, is used, instead of rubber drainage tubes or gauze packing. Iodoform is regarded as dangerous, and is responsible for some of the deaths after operation, but powdered aristol is used to form a film to wall off infected tracts.

The second half of the book consists of a number of short articles on a great variety of subjects, and might have been published separately with advantage. Some of the articles are of interest, but may not prove so to a man who is more interested in appendicitis than in the work of an individual surgeon. R. G. C.

The Retrospect of Practical Medicine and Surgery. Being a half-yearly journal containing a retrospective view of every discovery and practical improvement in the medical sciences. Edited by JAMES BRAITHWAITE, M. D., London, assisted by E. F. TREVELYAN, M. D., London, B. Sc., M. R. C. P. *Vol. CXIV.* January, 1897. Pages, xv., 435. American edition published by G. P. Putnam's Sons, New York.

The present number of the *Retrospect* is hardly recognizable by one who is familiar with the old magazine form under which it has been published so many years. With this issue the American edition is made uniform with the English in size and style, appearing as a neat, attractively bound octavo volume, a change that cannot fail to please the reader.

The scope and nature of the publication are indicated in the title. There are included in the contents more than two hundred synopses, and over half that number of abstracts of important medical papers or addresses, published here and abroad. The matters relating to the different branches of medicine and surgery are grouped together under their

appropriate heads, and in the case of the synopses, arranged alphabetically. Ease of reference is further facilitated by the full table of contents, and a complete index both of subjects and authors.

To select from the many certain articles for special mention is hardly practical. But for the busy practitioner, who has not free access to numerous journals, the *Retrospect* will afford an excellent summary of medical progress for the last six months of 1896. L. A. J.

Montignani's Compendium of the Insanity Laws of New York. By JOHN F. MONTIGNANI of the Albany Bar. Published by the Compiler. Revised to May, 1897.

This is the second edition of the *Compendium of the Insanity Law of New York State*, the first edition of which proved to be of so much interest and value to the medical profession. The interest of alienists in the insanity statutes of New York State is shown by the fact that orders were received for the first edition from nearly every State in the Union, from Canada, Newfoundland, and New Brunswick. In an appendix to his work, Mr. Montignani publishes the official regulations and orders of the State Commission in Lunacy.

Current Medical Literature.

Subacute Conjunctivitis.—In *Le Progrès Médical, January* 16, 1897, M. Morax gives the results of a clinical and bacteriological study of this condition. He proposes the name subacute conjunctivitis to designate a catarrhal inflammation of the conjunctivæ, due to a specific micro-organism. This affection, as yet not differentiated, and considered as a trifling reaction of the ocular mucous membrane, in the writer's opinion, constitutes a specific malady transmissible by contagion. The affection is clinically characterized by its benignity and long duration, is always bilateral, and disappears rapidly under treatment. It is observed at all ages, but more particularly in the adult or in the aged. At first limited to one eye it rapidly affects the other. In addition to the slight subjective symptoms there is noticed objectively a slight injection of the bulbar and palpebral conjunctivæ. This disease may persist weeks, or even months, without modification. Ordinary astringent medication causes a rapid cure.

The secretion examined microscopically shows, besides a few epithelial cells and polynuclear leucocytes, a considerable number of diplobacilli of large size with rounded extremities, which do not stain by Gram's method. They grow well on blood serum, which is liquified. The bacillus is not pathogenic to animals. The organism experimentally deposited on the human conjunctiva produces the same clinical picture as described above, the bacilli persisting through the trouble, and are constantly found in the secretion. A. J. L.

Renal Suppuration Due to Typhoid Bacillus.—The case is one reported by Ch. Ferret (*Gazette des Hopitaux, January* 26, 1897). On the thirteenth day of typhoid fever the patient complained of pain in the left flank on a level with the spleen, which was large and painful. On the twenty-third day, on careful examination, there was a distinct bulging. Palpation revealed in the upper part of the left hypochondrium a rounded, elastic tumor, the spleen lying anterior to this tumor. A diagnosis was made of abscess of retroperitoneal tissue in front of kidney. The operation consisted in evacuating pus, and was followed by a few days of temporary relief, but patient succumbed fourteen days after its execution.

The autopsy showed the pelvis of the kidney much dilated ; pyonephrosis, with multiple abscesses in the kidney substance. Cultures taken at the time of operation gave pure culture of the typhoid bacillus, and those taken at the autopsy from the kidney pelvis gave nothing but the colon bacillus, while those from the multiple abscesses showed pure culture of the typhoid bacillus.

A. J. L.

The Urine in Epilepsy.—(Mairet et Virsin the *Gazette des Hopitaux, January* 28, 1897.) Numerous experiments made by the authors lead them to conclude that the urine in epileptics before the attack is hypertoxic, and hypotoxic after, as well as between the attacks. These characters are found in the urine of all forms of epilepsy, and the writers believe these of much importance from both a clinical and medico-legal standpoint. A. J. L.

Practical Therapeutics.

Treatment of Sciatica by Injections of Glycero-phosphate.—(*Revue de Thérap. Med. Chir.*)

M. Billard (*Thèsè de Paris*) experimented with three solutions :

1. Glycero-phosphate of soda, 5 grammes
   Distilled water, 20 do

2. A solution containing per cubic centimeter :

Glycero-phosphate	of calcium,	4	centigrammes
do	of magnesium,	4	do
do	of potassium,	4	do
do	of sodium,	13	do
	Total,	25	

3. A solution containing per cubic centimeter :

Glycero-phosphate	of iron,	5	centigrammes
do	of calcium,	4	do
do	of magnesium,	4	do
do	of potassium.	4	do
do	of sodium,	8	do

One to four cubic centimeters can be injected, but two suffice generally. The solutions should be prepared in small quantities and be thoroughly aseptic. The syringe and skin must be likewise aseptic. The injection must be deep into the muscular tissue in the immediate neighborhood of the nerve. The first two solutions never give rise to pain, but the third, which provokes pain and inflammatory reaction, is to be rejected. The effect of these injections is rapid and surprising, a single injection at times relieving the neuralgia in the entire limb. At other times the injections must be repeated frequently before the desirable effect is obtained. Recent acute sciaticas rapidly improve in a few days, and the chronic, inveterate cases are frequently ameliorated by this treatment. Generally no untoward effects are noticed at point of injection; however, on rare occasions, an inflammatory nodule may form, which disappears in a few weeks. A. J. L.

Bromoform. — Gay (*Repert de Pharm.*, 1896) recommends the following emulsion :

Bromoformi,	1.2
solve in	
Ol. amygd. dulc.	15.0
f. c.	
Gummi arabici,	10.
Sirupi simpl.	30.
Aq. destillatæ,	65.

Iron in Chlorosis.—Israel (*Therapeutische Monatshefte, January*, 1897) finds that *liquor ferri sesquichlorati* is the most satisfactory form of iron for administration in chlorosis. He prescribes one drop in a wine-glass of water after meals, and gradually increases the dose until ten to twelve drops are taken daily.

Prevention of Post-partum Hæmorrhage.— Althill, (*British Medical Journal, March* 6, 1897), has used with great success the following prescription in the prevention of post-partum hæmorrhage:

℞	Liq. strychninæ,	f ʒ j
	Ext. ergotæ fl.,	f ʒ iij
	Inf. ergotæ, q. s. ad	f ʒ vj

M. et S. f ʒ ss. t. i. d.

This medicine is begun on the thirty-fifth week of gestation.

He draws the following conclusions:

1. When administered previous to the termination of pregnancy in the case of a woman in whom a tendency to post-partum hæmorrhage is known to exist, it tends in a marked degree to prevent its occurrence.

2. In ordinary doses it does not produce any injurious effect on either mother or child, and it seems to delay the commencement of labor.

3. It tends to make the involution of the uterus more perfect, and lessens the chance of the occurrence of subsequent uterine troubles.

4. It will not bring on premature labor or induce abortion unless uterine action has previously been set going.

5. In threatened abortion it seems to act as a uterine tonic, and in some cases tends to avert a miscarriage, provided the ovum is not blighted.

6. If the ovum is blighted, and especially if it is detached, ergot usually hastens its expulsion.

His belief is that ergot does not originate uterine action, but stimulates the uterine fibres when once they have begun of their own accord to contract.

Suppurative Inflammations. — Georzevsky (*Sem. Med. March* 3, 1897) has treated very successfully suppurative inflammations with a 2 per cent. solution of bicarbonate of sodium. It invariably stopped both the pain and the suppuration and effected a rapid cure without drainage.

Whooping Cough.— Roskam (*Ann. de la Soc. Med. Chir. de Liege, Feb.*, 1897) has very favorable results with 2-3 per cent. solutions of resorcin in the treatment of whooping cough. The solution is applied to the glottis with a fine sponge every four hours during the day and once or twice at night. In children under one year a 2 per cent. solution is used, and above that age a 3 per cent. solution. The great majority of the cases were cured within two weeks, and in infants under one year usually in one week. The writer suggests delaying treatment until the congestive stage is past and the whoop is well established, as otherwise the applications are apt to cause irritation.

Surgical Uses of Picric Acid. — Allan (*British Medical Journal, Feb.* 20, 1897) has found a concentrated alcoholic solution diluted with two parts of water and applied with a spray to be most successful in the treatment of varicose ulcerations. The leg is, after the application of the acid, covered with medicated adhesive plaster.

In recent wounds, with or without great loss of substance, this treatment is equally beneficial. This solution is very valuable in controlling capillary oozing.

Pruritis. — De Wannemacker has had very satisfactory results in the treatment of this most annoying affection with salophen in daily doses from three to five grams.

Rheumatoid Arthritis. — Philpots (*British Medical Journal, March* 27, 1897) recommends in rheumatoid arthritis 2 grains of methylene blue twice daily after food. The drug not only improves the arthritic powers, but has a very favorable effect upon the general nutrition.

Arterial Tension.— Professor Albert (*British Medical Journal, March* 27, 1897) claims that the heightened blood pressure in elderly people together with dilated and hypertrophied heart readily yielded to a course of sulphate of magnesia, iodide of potassium and mercury, but to avoid the recurrence the treatment should be persisted in.

ALBANY MEDICAL ANNALS.

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Original Communications.

ADDRESS*

OF DR. JOHN B. CHAPIN,

Pennsylvania Hospital for the Insane.

It is recorded in the history of the Pennsylvania Hospital that "on the 28th of May, 1755, the President, Joshua Crosby, attended by all of the Managers, the physicians, and many contributors, marched in a body from the Hospital (then on Market street), accompanied by a select concourse of citizens, and the children of the public schools who were of an age suitable to recollect the fact, to these grounds which had been acquired by purchase, and then laid the corner-stone of the Hospital building near which we are now assembled. On this stone is an inscription which ends with these words — "May the God of mercies bless the undertaking" — an invocation not to the unknown God, but to the living God then, now and forever. Although those who then assembled to perform this becoming ceremonial have been personally unknown to several generations which have succeeded them, as we look upon them now they were pioneers, discoverers, founders of nations, states and a new order of social existence with all of its problems. They well and truly laid the corner-stone, not only of a material structure which was to endure, but also of an organization on principles destined to perform its offices of helpfulness, healing and benevolence in

* April 28th, 1897, on the occasion of the opening of the *Garrett Memorial Building*, recently erected by the managers of the Pennsylvania Hospital, for clinical and other purposes, commemorative addresses were delivered by Dr. J. M. DaCosta, Senior Physician; Dr. Thomas G. Morton, Senior Surgeon, and Dr. John B. Chapin, Physician-in-Chief, Department for the Insane.

the relief of human suffering, through all ages. On this corner-stone was to be erected a structure not as a memorial of *their* benevolence, but to be dedicated to the service of suffering humanity for generations, which were to follow after the founders had passed away.

They asked the provincial authorities to legalize and perpetuate their organization which provided for the care of three classes — the sick, the injured and the insane; and it is a noteworthy fact that the organic law creating this institution described it as a hospital to be properly disposed and appointed for the care of all patients, "where, by the blessing of God on the endeavors of skillful physicians and surgeons, their diseases may be cured and relieved." This law was enacted in May, 1751, and distinctly recognizes insanity as a disease amenable to medical treatment and management. It was the pioneer movement of the kind in America, begun forty-one years before the reforms in the treatment of the insane without the imposition of cruel restraints proposed by William Tuke at York, England, in 1792, and Pinel, in France, in 1795.

In January, 1836, a site was acquired west of the Schuylkill, for the purpose of erecting upon it a hospital structure to receive the insane then occupying the west wing of the Pine Street Hospital. This change had become imperative by reason of the limited space that could be devoted to out-of-door exercise; the growth of the city and the inability to extend the accommodations for the insane. On the 22d of June, 1836, a large assemblage of friends of the hospital was present to witness the laying of the corner-stone, and listen to an address by Dr. Benjamin H. Coates. Full of hopefulness, and impressed with the enlarged usefulness which the new department promised, he predicted that, "we may reasonably hope for a long service of progressive improvements and refinements. Here, never, certainly, shall be heard the lash or the chain. We may hope that here the violent and ferocious shall be restrained from mischief or protected from injury by methods the mildest and most humane — that the temporary ebullition of an inflamed brain shall be allowed to expend itself in harmless noise or motion — that the helpless shall enjoy relief for his wants, and preserva-

tion from indignity and disgust, unconscious of the kindness that protects him. Here shall the mind, enfeebled by long-continued disease, by the grinding inflictions of the world, or by the stormy struggles of unbridled passions, be permitted to waste in disease the remaining years of a shortened life. The blessing of the Author of nature shall hallow the scene, and the tortured soul shall enjoy the soothing quiet which is ever felt in contemplating the works of eternal beneficence."

The projected hospital was completed January 1, 1841, when ninety-three patients were transferred to the new department. To this date 4,360 insane persons had been treated in the Pine Street Hospital.

Following the erection of the separate department for the insane, west of the Schuylkill, there was a rapid accession to the number of patients. In 1853 the managers, in their annual report, stated that the wards were often inconveniently crowded, and that as many as fifty applications for admission had been refused during the year. The managers were again confronted with the problem and embarrassments of overcrowded wards, and the necessity of turning from the doors of the hospital many worthy persons whose needs no other institution or organization would probably come forward to supply. It was thereupon voted to erect a separate hospital building to be devoted exclusively to the reception of men.

At the end of the year 1854 a committee reported that 269 subscribers had offered to contribute $127,000 — a fact that was considered most honorable to the community and encouraging to the managers. On the 3d of March, 1856, a building committee was appointed with authority to commence the construction of a new building.

The corner-stone was laid October 1, 1856, by Richard Vaux, Mayor of Philadelphia, in the presence of a large company of the friends of the hospital, when addresses were made by Dr. George B. Wood and others. The department for men was opened October 27, 1859, in the presence of a number of contributors and managers with appropriate ceremonies.

The whole cost of the department for men was $352,111.51, which sum was contributed by the benevolent citizens of Phila-

delphia. The cost of the department for women was $250,000, a sum realized mainly from the sale of lots adjacent to the Pennsylvania Hospital, and the wise administration of its capital. Other additions, improvements and betterments have been made from time to time from the avails of bequests and gifts. The one-story wards; the two blocks, or wards, named for the benefactor, Joseph Fisher; the Mary Shields' wards and the Isaiah V. Williamson wards, respectively, bearing the names of the eminent benefactors; a detached cottage, house or villa, affording liberal accommodations for a small number of women; the new wards, completed in 1896, to furnish improved accommodation and a better classification, have been added to the plant of the women's department, while at the department for men a gymnastic pavilion and a swimming pool connected with medical baths have been erected in recent years.

The whole sum expended for lands in the first establishment of the plant in West Philadelphia was $650,000, exclusive of buildings subsequently added. From 1841 to the end of the hospital year, 1897, the aggregate sum received for board and treatment of patients amounts to $7,076,652.30; amount expended for maintenance of the hospital, $7,160,961.55 — exceeding the receipts by $84,309.25. The amount expended on free patients, and for care of patients received at less than the cost of support, was $1,111,300. Of all of those sums not one dollar was asked or received from the public treasury.

The inquirer might ask for an exhibit of the operations of the hospital from the opening in 1751. It appears that the whole number of insane persons admitted to the present date is 14,898, of whom 9,776 were discharged cured or improved and the remainder, excepting the number now in the department for the insane, were discharged unimproved or died.

To turn to another side of our subject, it may now be properly recalled that from the time when Hannah Shines, being insane, was entered as a patient for treatment in the period of its humble beginnings made on Market street, in 1752, to the present, is included the whole history of efforts made in America to ameliorate the condition of insanity, and the recognition of the study of insanity as a distinct department of medical science.

Dr. Andrew White (our new Ambassador to Germany) in his recent book "On the Warfare of Science with Theology," referring to the condition of the insane in England in the sixteenth century, says that "Shakespeare makes one of his characters speak of madness as deserving '*a dark house and a whip.*' At the end of the sixteenth century Bethlem was reported loathsome for any man to enter; in the seventeenth century John Evelyn found it no better; and in the eighteenth century Hogarth's pictures show it to be what it had been in those previous centuries." Dr. White bears the following testimony, that "The first humane impulse of any considerable importance in this field seems to have been aroused in America. In the year 1751 certain members of the Society of Friends founded a small hospital for the insane on better principles in Pennsylvania. To use the language of its founders, "it was intended as a good work acceptable to God." The improved and humane system of caring for the insane, now generally recognized in Christendom, has resulted largely from the recognition of insanity as a disease, and placing the insane under medical direction. In the accomplishment of this great work, which Andrew D. White pronounces "the final struggle and victory of science," the Pennsylvania Hospital must always justly hold the honored place as the pioneer.

We know but little of the medical treatment of insanity during the first fifty years of its existence, for there was absolutely no guide or experience to direct. Insanity was not then regarded as a disease, but more generally recognized as a visitation, an infliction for sins, a demoniacal possession — a feeling which has strangely been transmitted even to the present day, as seen in "child-fear," the belief in demonism, and the awe and dread with which the insane are sometimes regarded. If the caricatures of Hogarth present truthful pictures of what he observed—whether made to excite pity or to excite indignation—they have a historic value showing the condition of the insane in "Old Bethlem" in his day — so did the master, Benjamin West, reflect in his painting the sentiment of his day when he selected "a subject analogous to the situation" in 1800, the dawn of the present century. "It is the Redeemer of Mankind

extending His aid to the afflicted of all ranks and conditions." It must stand in all ages as an appeal to the highest emotions and sentiment; awaken human sympathy, and incite inspiration to consecrated acts.

In 1806 came the first rational treatise on insanity, by Dr. Thomas Arnold, followed by a similar work in 1808 by Dr. John Haslam. In 1812 Dr. Benjamin Rush published a book entitled "Medical Inquiries and Observations upon the Diseases of the Mind," which was far in advance of the thought of his age. From this book we may infer that the practice of bleeding and general depletion, such as obtained in ordinary diseases, was applied to the treatment of insanity in his service, and so continued until near the close of the first centennial of this hospital. During this long period there had been an accumulation of experience and observation leading to radical changes in the treatment and care of the insane in a directly opposite direction. For more than fifty years depletion by bleeding and low diet have been abandoned. It is now recognized that 60 per cent. of our admissions have an origin in impaired general health, and exhaustion of nervous force, to be best treated by a rapid restoration of the bodily health and the quality of the circulating blood to a normal state, with a result that the average duration of treatment and hospital residence of cured patients has been reduced ten weeks, with a tendency to a further decline.

At a period when the researches of the laboratory have done so much to enrich every department of medical knowledge, it may be a pertinent thought, to what extent this hospital, with others, should enter a special field of investigation, so fair, so promising of important benefits to mankind, and yet unexplored. That the secret of the nature of vital force, and the complex operations of the human mind may be yielded by any exploration is perhaps beyond expectation, but the conditions under which these forces act, and may be best restored when impaired, are within the scope of proper scientific inquiry. That they are subject to some rules of action, or law, may be assumed by analogy, but the revelation of the hidden laws cannot be made manifest except through patient work on many lines, by investigations of the most technical character. It is not to be expected

that any one center of investigation will solve the intricate problems that are presented. It is the history of every scientific advance and discovery that it is finally rendered possible only by reason of a great accumulation of knowledge — the result of the work of many observers.

With the changes in the medical treatment of the insane other advances became possible. Mechanical restraints gradually disappeared. The doors of the hospital swing easier in both directions. It is recognized that the insane have lost none of their legal or other rights, nor are they less entitled to respectful and sympathetic consideration, by reason of their affliction. The directors of the hospitals are no longer wardens, but physicians; the attendants upon the insane are not keepers, but nurses, and while at a period not remote in some places it was considered necessary to employ men in women's wards, the white caps have found a place in the wards of men, there we trust to remain.

On four occasions the friends of the hospital have assembled to witness the placing of a corner-stone, and to show by their presence their approval of the proposed work. Now we are met to dedicate in a public manner to their several uses, not only this structure, but all of the buildings of the several departments of this hospital which have been erected during this constructive and reconstructive era of the hospital. We are here to commemorate the benevolent purposes of those, whether living or dead, through whose munificence it has been possible to erect and consecrate these several structures to the use of the sick, injured, and the insane.

We would at this time hold in precious remembrance the long line of friends and managers of this hospital, and those who in other relations have administered, guarded, and advised about its material concerns as a sacred trust. If at times they have been confronted with financial problems they could not at once solve, they have been rich in the faith that produces works, and have had the gift of persistence. I assume I do not make an inappropriate disclosure here in this assemblage of the friends of the hospital, that a reference to the minute book of the attending managers shows no omission of the weekly visits to the two departments of the insane since their establishment, and that in fifty-six years 2,912 such visits and personal inspections were

made — a written record of extraordinary fidelity to a trust. If it is an unwritten rule that the living shall not be named, we can speak with gratitude of the special benefactions made to the department for the insane by Joseph Fisher, Mary Shields, and Isaiah V. Williamson in past years, and the eminent professional services rendered to the insane of this and other lands by Rush and Kirkbride during a united service of seventy-three years.

Following the memorable march of the procession that entered upon these grounds in May, 1755, to lay the foundation-stone, there began another procession of all creeds and nationalities, and of all social conditions, stricken with some one of the ills or calamities of life, and it continues to move thitherward with ever increasing numbers.

To discharge in a magnanimous manner the responsibilities of a transmitted benevolence — which do not decrease, but from various causes increase with advancing years — is the problem constantly confronting the managers of this hospital. Let us strengthen their hands as we have heart and means in our day and generation, that this heritage may be preserved and handed down to those who follow us with a larger and better equipment for doing its appointed work. In this service men and women will come, and go, as the leaves of autumn, but may the God of our fathers, the "God of Mercies continue to bless the undertaking."

THE INDICATIONS FOR AND TECHNIQUE OF THE INDUCTION OF PREMATURE LABOR.*

BY JAMES P. BOYD, M. D.,

Professor of Obstetrics, Gynæcology and Diseases of Children, Albany Medical College.

The induction of premature labor is indicated when the continuance of pregnancy to full term would expose mother or child to serious risks, which might be prevented by the arrest of gestation. One of the indications is a pelvic deformity of such a nature as to prevent the birth of a living child at full term, and yet allow the safe delivery of a premature viable child. Korn, of Dresden, says that labor may be safely induced between the thirty-second and thirty-sixth weeks in flat pelves with a conju-

* Read before the Medical Society of the State of New York, January 26, 1897.

gate of two and three-quarter inches, or in generally contracted pelves with a conjugate of three inches. If the solution of the problem depended upon the accurate measurements of the pelvis alone, the subject would not present so many difficulties. A difficulty arises when the time for operating has to be decided upon. We cannot in most cases determine the date of conception, and yet this must be done approximately if we are to determine upon the extreme limits of viability. If a mistake is made, we may operate too soon or too late. An important factor in the case is the size and plasticity of the fœtal head.

From the measurements of Burns, Salomon, Dubois, Stolz, Tarnier and Budin, the bi-parietal diameter of the fœtal head is:

At full term	9-9½ c. m.
At 8½ months	8½ c. m.
At 8 months	8 c. m.
At 7½ months	7½ c. m.
At 7 months	7 c. m.

THE WEIGHT OF THE CHILD MUST ALSO BE CONSIDERED.

The weight of the children seems generally to increase with the age of the mother and the number of previous births. Ahlfeld judges approximately of the length of the fœtus, and the size of its head, by measuring the length of the fœtal ovoid.

In cases in which the head is presenting some idea of the relative size of the child, and the birth canal may be obtained by gently pressing the head into the brim of the pelvis. If it is found that the head enters the pelvis or engages, its size is such that in all probability a favorable termination of labor may be expected.

TIME FOR OPERATION.

Schroeder usually operated in the thirty-sixth week, rarely before the thirty-fourth. Usually 240 to 250 days from the cessation of the last menstrual period should be allowed to elapse before operating. The prognosis for the mother is generally good, but should always be guarded. For the child the more immature it is the worse the prognosis. Between the thirty-second and the thirty-sixth week the greatest care will be necessary to preserve its life. The French obstetricians of late years

have given much attention to the rearing of feeble infants, and through the agency of the contrivances of Tarnier and others the chances of premature children have been very materially increased. Crede's apparatus has been employed in the Leipsig maternity for more than twenty years. The results obtained by the use of the incubator in Paris, according to Budin, have been wonderful. With Tarnier's incubator and gavage the results have been excellent.

When we consider the many difficulties which the obstetrician has to encounter in determining the exact time to induce premature labor in the deformed pelvis, in the interests of mother and child, it is not to be wondered at that the operation has been restricted in this class of cases by the good results following the modern Cæsarean section and symphysiotomy.

The induction of premature labor is indicated in placenta prævia and in eclampsia; in some cases of advanced heart and lung diseases, in general œdema, jaundice, tumors and hydramnios; in multiple pregnancy, when a dead fœtus remains in utero; in cases where the children of previous pregnancies have died in utero during the later weeks of gestation from disease of the placenta; in cases where, in previous labors, the head of the child at full term has been prematurely ossified or unusually large, so that labor has been difficult, and dangerous even with a normal pelvis. These are some of the cases in which it may be necessary to induce premature labor.

Various methods have been tried for inducing labor. The most satisfactory method is the introduction within the uterus of aseptic, flexible and solid bougies. The best bougies for this purpose are solid, moderately flexible, of medium size, and enveloped with silk, covered with a smooth and impervious coating. They should be prepared by scrubbing them with soap and water, rinsing them thoroughly and soaking them in creolin or bichloride of mercury.

In addition, the physician will require a steel uterine dilator, tenaculum forceps, uterine dressing forceps, a speculum, iodoform gauze and bichloride gauze. To prepare for this operation the same care should be exercised which is employed before abdominal section. The patient's bowels should be thoroughly moved. She should have a bath. The skin should be thor-

oughly cleansed with soap and water. The hair about the vulva should be cut short, the vagina cleansed with soap and water, and afterwards a douche of creolin or bichloride given.

Special attention must be given to the surroundings of the patient, and everything which touches her must be thoroughly aseptic. The same rules apply to the operator as in other surgical operations, especially if the uterus is to be emptied at once. The patient may be placed upon her back or upon her side. If Sims' speculum is used, the cervix is caught with a tenaculum and the bougie gently inserted through the os exterum up into the uterus, between the membranes and uterine wall, until but three inches of its length remains outside the os. It is better, if possible, to introduce a second beside the first. The vagina should be lightly tamponed with iodoform gauze. If necessary a T bandage may be applied.

The bougies may be inserted without the aid of the speculum. In some cases the dilatation and softening of the cervix may be hastened by removing the gauze, douching the vagina, and also removing the bougie after twelve hours. The bougie is thoroughly cleansed and again introduced. If possible, a second bougie is also inserted. Usually the active labor will begin about twenty-four hours after the introduction of the bougie, if this is allowed to remain undisturbed. When the dilatation has advanced far enough, Barnes' bags, McLean's double bag, Hanks' dilators or the silk bag of de Ribes may be used. Iodoform gauze can be employed with advantage in some cases. When haste is necessary, the os and cervix must be stretched with the fingers. It will rarely be necessary to resort to incision into the os and cervix, according to the method of Dührssen.

152 WASHINGTON AVENUE.

NOTES TAKEN FROM THE CLINICAL LECTURES OF DR. JAMES GREGORY, OF EDINBURGH, IN 1787.*

INTRODUCTION.

To the Editors of the Albany Medical Annals:

Not long ago, while rummaging in the document room of the Utica State Hospital, I happened upon a manuscript volume of notes taken during a course of lectures delivered in 1787, at Edinburgh University, by the celebrated Dr. James Gregory. One of the lectures deals so interestingly with the disease "mania," as at that time conceived and treated, that I am moved to send you a transcript of the notes, thinking that you may possibly consider them worth publishing in the ANNALS. The Gregory family, as all the world knows, was one that attained the highest eminence in science in Scotland. James, his father, John, and his grandfather, James, were all professors of medicine, and his great-grandfather was the inventor of the Gregorian telescope. It is noted of James Gregory that he had an utter detestation of all those professional arts by which the favor of the

* In "St. Ronan's Well," Scott indicates the high estimation in which Dr. Gregory was held in his own time in the following dialogue and note:

"Unquestionably, madam," said the doctor, "I am no friend to the use of alcohol in general, but there are particular cases — there are particular cases, Mrs. Blower. My venerated instructor, one of the greatest men in our profession that ever lived, took a wine glassful of old rum, mixed with sugar, every day after his dinner."

"Ay! dear heart; he would be a comfortable doctor that," said Mrs. Blower. "He wad, maybe, ken something of my case. Is he leevin', think ye, sir?"

"Dead for many years, madam," said Dr. Quackleben; "and there are but few of his pupils that can fill his place, I assure ye. If I could be thought an exception, it is only because I was a favorite. Ah! blessings on the old red cloak of him! It covered more of the healing science than the gowns of a whole modern university."

"There is ane, sir," said Mrs. Blower, "that has been muckle 'recommended about Edinburgh — Macgregor, (*a*) I think they ca' him; folk come far and near to see him."

"I know whom you mean, ma'am — a clever man — no denying it — a clever man; but there are certain cases — yours, for example — and I think that of many that come to drink this water — which I cannot say I think he perfectly understands — hasty — very hasty and rapid. Now I — I give the disease its own way first — then watch it, Mrs. Blower — watch the turn of the tide."

"Ay, troth, that's true," responded the widow; "John Blower was aye watching turn of tide, puir man."

"Then he is a starving doctor, Mrs, Blower — reduces disease as soldiers do towns — by famine, not considering that the friendly inhabitants suffer as much as the hostile garrison — ahem!"

a The late Dr. Gregory is probably intimated, as one of the celebrated Dr. Cullen's personal habits is previously mentioned. Dr. Gregory was distinguished for putting his patients on a severe regimen.

public is sometimes too successfully propitiated; whence, too, came the various controversies in which he engaged with his brethren. In the medical library of the Utica State Hospital is a bulky volume of over five hundred pages, entitled a "Memorial to the Managers of the Royal Infirmary," the object of which was to call attention to the mode of attendance of the surgeons in the hospital promiscuously by rotation, and to show that it was an infringement of the charter, bad for the patients and inconsistent with the purpose of the institution. It passes belief how so busy a man could have found time for such elaborate disputation. Speaking of the prevalent habit of self-gratulation, as exhibited more particularly in connection with the Victorian jubilee, the London *Spectator* has just declared that "hard thinking is not increasing, and the competent of our day are not quite so competent, especially as regards strength of will and intellectual energy, as the competent of two generations ago." The life of James Gregory seems to give point to this reflection.

If these notes are esteemed of sufficient interest to the editors of the ANNALS to merit notice, I will gladly furnish more like them on demand. When the great vigor of the treatment of those earlier days is considered, the marvel is that the *naïf* note, "She died the next day," as in this case of mania, does not occur with greater frequency elsewhere in the chronicle of results.

G. ALDER BLUMER.

June 15, 1897.

Jean Wyllie Aet 36. *Mania.*

This woman's disorder was preceeded by a kind of melancholy, induced by an uneasiness of mind, till at length she became raving mad: & when she came into our hands, was in a complete state of Catalepsy; was seemingly insensible tho' from the appearance of the eyes there was some sensation. When the Limbs were placed in any particular position they retained that position for some length of time. This Stupor alternated with a considerable degree of fury. Pulse very variable.

Blisters and Laudanum had been tried without any good Effect.

Since she came into the Hospital some more information has been obtained respecting the cause of her Illness. It appears

that not long after she was married, her husband went from home & was absent for about 3 years; during which time she knew not where he was. Within eight days of his return to her she had Connection with some other person. He was informed of it, but by means of her friends, the matter was overlooked. Still she imagined it was impossible that her husband would pass it over; & tho' he did she could not forgive herself for her Conduct: & being a woman of much goodness, & high sensibility, was reduced to the unhappy situation of Mania. It also appeared that he had not used her so well as he ought to have done.

A certain state of the brain is necessary to all motion. Any kind of pressure on it will produce a certain degree of stupor, delirium, &c. — Inflammation & suppuration of the brain effusion &c. occur upon dissection in these Cases, viz., of Mania. Morgagni mentions some cases where the brain was unusually hard.

All disorders of the internal senses are said to originate from some injury done the brain; but this is far from being true, for we often find delirious people in fevers much relieved by taking wine, which should increase the inflammation, if any were present.

The suppression of usual evacuations, as the menses &c., are said sometimes to give rise to all this train of symptoms. Any kind of fermented liquor may produce stupor & delirium. Opium has effects nearly similar to these. Every kind of narcotic has some such effect. Any of the passions carried to a certain length will produce such effects.

The mere Circumstance of Restraint, & pursuing a cool Regimen are very powerfull remedies in this disease. Great Evacuations, as Bleeding, general & topical. Blistering the Head is of great use in many cases. Drastic purges are sometimes very useful. These all evacuate the system &, diminish Irritability. *Emetics* have also been useful, & after their operation Laudanum has very good effects; even before the emetic an anodyne may be given with advantage.

Cold Bathing has also been used with Advantage — Maniacs bear an amazing degree of cold without seemingly suffering from it. I had a patient in the infirmary a few years ago, a young gentleman who escaped from the house between 8 & 9 O'Clock

in the Evening in the month of Feb'y. He made his way naked to the north bridge. His keepers left him to himself in order to see what he would do; & he remained out till 9 the next morning. His keepers then desired him to return to the infirmary which he readily complyed with. I saw him in ¾ of an hour after he returned. He was then at the fire & much more furious than ever. The cold had the effect of diminishing the violence of his symptoms to a very considerable degree, but the heat of the fire made him worse than before. The Mercury in the thermometer stood that night at 26.

Professor Robinson relates the case of a man at Petersburgh, who had got out of the City in a fit of Mania. He was wishing to return, & was stopped by one of the guards, & for fear of being detained by others he went out of the beaten road, & walked in the snow up to his knees, from six in the evening till two next morning. His feet and legs were said to be the warmest parts about him. The cold lessened his fury for a time, but on his approach to the fire in the guard House to which he had been brought, his symptoms were rendered much worse. The mercury in the Thermometer then stood at 69 below nought; a degree of Cold sufficient to induce sleep in a healthy person, which would terminate in death.

In the Cure of Maniacs, an old man in the Highlands has been long in the custom of making them work very hard. He used to take one of them at a time, to walk with him, & during the walk, endeavored to pick a quarrel with him, which in general was no difficult matter to do. He would then fall a-fighting the Maniac, & whip him most unmercifully. By this means they were rendered so much afraid of him as always to do what he desired them. Some of them indeed by his Command would even assist in binding the others. They did a great deal of his work; & sometimes he put them into the Harrow & made them work like Horses.

An Emetic was ordered to our patient with a view to shake the whole body, and thus operate on the Nervous System. She took 10 Grains of Tartar Emetic without its having any sensible effect. She afterwards took some White Vitriol, which brought up a quantity of viscid Bile. She took *L. L.* gutt. LXXX without its having any great effect. She was afterwards ordered L. L.

gt. L, to be repeated every hour for three times till it should produce some effect.

A strong Cathartic was given her, which operated well. She died the next Day.

Upon opening the head there was no unnatural appearance; only a small quantity of gelatinous matter about the optic Nerves which could hardly have any sensible effect. The Brain was in every respect sound.

For the ANNALS.

NASCENT CHLORIDE OF AMMONIUM IN PNEUMONIA AND GRIP.

BY JOHN ASHBURTON CUTTER, B. Sc., M. D.,
(Albany Medical College, 1886), New York City.

Thursday, February 18th, 1897, I was called, 8 A. M., to see an Austrian, aged about thirty-eight, who had been complaining of difficult breathing and fever for two days. I found the dyspnœa had increased, the patient was raising bloody expectoration, and practically the lower half of the left lung was involved in inflammation. I judged the case to have been one which Dr. Samuel B. Ward used to describe as "walking pneumonia."

I instituted vigorous treatment by digitalis and Dover's powders, internally, with counter-irritation to the chest, externally. In the evening I found, because of neglect of his nurse, he had gotten up and gone out-doors. I then arranged matters so that he should be cared for in his own room. He was visited two or three times daily, but on Saturday about 5 A. M. the lower half of the right lung became inflamed. I did not not see him until about nine A. M., as the nurse did not think it necessary to send for me. I kept on with my treatment, and in the afternoon dropped some of the medicine and went on to carbonate of ammonium and muriate of ammonium, internally; counter-irritation employed also over the right lung. The case did not improve, and finding that he was discharging from the nose a dark-colored mucus, that his pulse was getting feebler and more frequent, and that his Saturday night had been one of partial delirium, I made up my mind that the case was due originally to grip, and that the best thing was to stop all of the irritation and offensiveness to him of the frequent giving

of medicines and of the application of counter-irritants to the chest, and take up positive germicidal treatment.

I went out to the drug-store about two P. M. this Sunday and bought a couple of ounces each of stronger ammonia and commercial hydrochloric acid. Returning to the patient I asked for two pieces of cotton cloth; obtaining them I wet one with the ammonia and the other with the commercial muriatic acid. Standing at the foot of the bed I shook the two cloths together and instantly there was formed the nascent chloride of ammonium, appearing to the eye like smoke in the room. Because of the acute nature of the inflammation in the lungs, I instructed him to breathe the chloride of ammonium crystals cautiously; he did so, but almost immediately exclaimed as to his relief. I then extemporized the chloride of ammonium directly by his side, and left orders that it should be exhibited every half-hour. This patient made an almost uninterrupted recovery. The chloride of ammonium was used for three weeks more. On the Tuesday following the Sunday, because of distress in the right lung, I used a large thick poultice of mustard and water and had it remain until it drew a good blister. In the third week of his confinement he was placed on a tonic of the fluid extracts of Grindelia Robusta and Yerba Zanta. I still employed the chloride of ammonium, but not so often.

At the end of six weeks his strength had so far recovered that he was able to get out and is now doing his work about as well as before his sickness.

Remarks:

1. The method used of extemporizing the nascent chloride of ammonium was suggested some years ago by Mr. James H. Hutchens, of the Fraser Tablet Triturate Company; Mr. Hutchens having been a medical student at Albany one year.

2. The Germans have written on the value of nascent chloride of ammonium in chronic diseases of the chest, and the bibliography appended shows what has been written in America.

3. I regret that I did not employ this means of relief sooner in the case.

4. No one can say that he was cured by crisis, as the inflammation in the left lung could not have been of more than five

days' duration, and in the right lung of not more than thirty-six hours, when I employed this means of relief.

5. I believe the rationale of relief is as follows: The nascent chloride of ammonium is a germicide, and therefore destroys the parasites of grip. Next, the ammonia, which is somewhat free from the nascent salt, as extemporized from commercial muriatic acid, is a tonic and stimulant to the lungs. Next, we all know that there is a great change in the whole economy as to chlorides in pneumonia, and this exhibition must go to supply the deficiency. Finally, the sickest patient can use this means of relief without any effort on his part, and if nerve force can be saved by stopping causes of irritation, there is much better chance for the patient to pull through.

I wish that those who may read this contribution, who are in general practice and see much of pneumonia, would try this simple means of relief and report results.

EQUITABLE BUILDING, 120 BROADWAY.

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Clinical and Pathological Notes.

Diabetes in a Child.

READ BEFORE THE HARTFORD MEDICAL SOCIETY BY WALTER GRAHAM MURPHY, M. D., EAST HARTFORD, CONN.

S. H., aet. $4\frac{1}{2}$ years.

Presented at my office January 25, 1896, with the following points in his history: Increased thirst, polyuria and emaciation; was obliged to get out of bed several times at night to urinate; at times as often as every hour or hour and a half; pale, excitable,

appetite irregular and usually constipated. Examination of thorax and abdomen, negative. Temperature normal. Pulse 80. Weight 37 pounds. No excoriations about the glans

Previous history: Has had several similar attacks as the present, and would seem to recover. Always considered as an irritable bladder.

Family history: Rather unsatisfactory. Father of nervous temperament. No particular tendency to lung troubles or scrofula. Patient's mother dead. Could get no information of diseases in her family, which might influence the health of the child.

Examination of urine: Color, light yellow; reaction, acid; specific gravity, 1.040; albumen, no; sugar, yes (Fehling's). Whole quantity in 24 hours, three pints. Given Fowler's solution, gtt. j t.i.d., increasing gtt. j each day to gtt. iij. Strict diet as recommended by Starr (American Text-Book of Children's Diseases).

January 30. — Urine 1½ pints. Not obliged to get up at night to urinate; bowels in better condition; can go three hours without passing water; less thirst; does not object to diet; face slightly œdematous about the eyes; Fowler's solution reduced to three drops night and morning.

Examination of urine: Color, darker; reaction, acid; specific gravity, not taken; albumen, no; sugar, yes (Fermentation test and Fehling's). By comparison, not as much sugar as in first examination.

Seems much better; playing about the room, happy and contented.

February 10 — Color of urine darker. Considerable red sediment after standing. Better color in face. Tongue somewhat coated. Pulse, 90. No temperature. Thirst not severe. Sleeps all night without waking. Examination of urine: Color, straw; reaction, acid; specific gravity, 1.024; albumen, no; sugar, no.

February 15 — Steady gain. Quantity of urine from one to one and one-half pints; occasionally slight puffiness under the eyes in the morning; eats and sleeps well; not particularly thirsty, except in the morning; can go three or four hours without urinating, and at times has gone for five hours; gaining in flesh and strength.

March 1 — At this time had recurrence of many of former

symptoms; passing a little over a quart of urine; increased thirst and obliged to get up three or four times at night to pass water; medicine had been given irregularly and diet somewhat relaxed; given arsenic as before, and trouble cleared up in a few days.

March 11 — Seems in very good condition. Is somewhat tired of dieting, but keeps at it fairly well. Has been on codeia (gr. $\frac{1}{8}$) for several days.

March 16 — Examination of urine: Color, light; reaction, acid; specific gravity, 1.034; albumen, no; sugar, yes. Quantity of sugar, by comparison, not as much as in first examination. Many of the symptoms have returned. Emphasized the importance of diet. Codeia discontinued, and gave instead benzonol (gr. ij t.i.d.).

April 8 — Symptoms in abeyance. At times will have a day of increased thirst and increased quantity of urine, but generally better. Improved in general appearance. Urine still a lighter color than normal. If out without rubbers, or if the day is cold or disagreeable, is apt to have slight return of symptoms, which are quickly controlled by arsenic. Urine at times frothy. Appetite irregular. Breath occasionally has a sweetish, offensive odor.

Benzonol discontinued. Fowler's solution given occasionally for three or four days. Diet continued. General condition and appearance very much improved since his first visit.

From this last entry I have no record of the case, the child passing from my observation. For a time the remedies were continued, but not strictly and carefully, and more liberties were allowed in the diet. Later in the summer the child was taken to New York for a visit, and the diet became more liberal. In July the child was brought home, and was very tired from his journey. Twenty-four hours after his arrival he had a severe convulsion, and these continued occasionally for about two days, and the child died. No autopsy.

I regret that my notes could not be continued to the end, but as they are the case is interesting and worthy of careful study.

First. The rarity of the disease, diabetes mellitus, in children under five. The Register-General's report of England and Wales, from 1851-1860, gives the total number of deaths from diabetes M., 4,546; under five years, only 51. The number of deaths in the city of New York from this disease, 1878 to 1888, was 598, and only four under five years.

Second. The influence of strict diet and the administration of arsenic. Codeia, usually employed with benefit in adults, was disappointing in this case.

Perhaps if the same care had been exercised in the remedies and diet as in the beginning of the case the ultimate result would have been different, although the prognosis in the young is very grave indeed.

Editorials.

Aphasia and Will-Making

A most exhaustive paper on Aphasia and Will-making by Dr. Byrom Bramwell appeared recently in the *British Medical Journal.* The high standing of the author as a neurologist, the great public importance of the subject and the imperfect consideration which it has hitherto received give to this lecture inestimable value. The general statement is first made that some aphasic patients are competent to make wills while others are not, and therefore each case must be decided separately.

Aphasia is not a single well-defined entity, but embraces different forms of speech defects, as word deafness, word blindness, motor vocal aphasia and agraphia, and in these different varieties the will-making capacity is not the same. A difference must also be drawn between the subcortical and the cortical aphasias, as in the former internal thought and speech are usually unaffected, while in the latter they are usually in some degree and often profoundly involved.

The fact, too, that these varieties of speech defect may be isolated or combined; that they may differ also in severity; that the degree of involvement of the intellectual faculties may be slight or very great; that there is often the greatest difficulty of intercommunication render this subject the most perplexing in the whole field of medical jurisprudence. Although no exact general statement as to the mental involvement of patients affected with aphasia can be made, it is commonly believed that impairment of the mental faculties is greater in cases of sensory aphasia than in those of motor aphasia. In cases of combined aphasia the mental impairment is always very profound. Then the age of the patient, the character of the cerebral vessels and

the condition of the brain tissue prior to the aphasic symptoms must all be considered. The mental condition of aphasic patients may thus be affected either as a result of the aphasic condition itself or of a brain lesion upon which the aphasic symptoms depend or with which they are associated. In order that no injustice be committed, the mental condition of aphasic patients should be carefully determined by trained observers, as it is often only after great difficulty and with true appreciation of the site and character of the lesion that the wishes and ideas of these patients can be understood. The automatic utterances of such patients might easily be mistaken for intellectual expressions and the intelligent responses to simple questions might lead to the hasty conclusion that the intellectual faculties even for complicated business operations are unimpaired. The examiner must not be satisfied with a mere assent, but by a series of test questions, often contradictory and at times absurd, he must be fully convinced of the patient's competency.

The conclusions of M. Legrand du Saulle, published fifteen years ago, are still applicable:

When the aphasic remains faithful to his old habits of life, has had the care of his affairs, has been able to watch over his interests, to form sensible plans, to appreciate adequately persons, events and things, to give his confidence and friendship willingly, he is capable of making a valid will. When he takes no interest in business or friendships, becomes indifferent, apathetic, negligent, forgetful of proprieties, suspicious and credulous, irritable and passive, shows himself emotional and tearful on slight pretext and has manifest alterations in his sentiments and affections, his mental competency is very questionable or absolutely invalid.

Improved Diphtheria Antitoxin.

Behring, in a recent number of the *Fortschritte der Medicin*, writes concerning the prevention of the injurious after-effects of antitoxin. The reports of disturbances following the use of antitoxin are now very much less frequent, although the number of cases treated and the size of the dose has markedly increased. Complications occur, and always will, and these are attributed by some to the antitoxin. Henoch, in "Diseases

of Children," says, "In all descriptions of diphtheria much is said of the exanthem, which occurs at times in the course of the disease in severe cases as a diffuse erythema, or as a more or less intense roseola." Antitoxin is now often blamed for all the complications. The injurious effects which may at times follow the use of antitoxin are due not to the antitoxin, but to the albuminous elements, salts and foreign substances present in the antitoxin. The antitoxin itself is absolutely uninjurious, and cannot produce poisonous symptoms in men or in animals, either healthy or diseased. Antitoxin serum of high degree, when injected into control animals, acts like normal blood serum. No investigator has found in laboratory experiments with antitoxin changes different from those following the use of serum free from antitoxin. Since the discovery of antitoxin the size of the dose has been continuously increased. Therefore, the bad effects, if due to antitoxin, should occur much more often and with greater intensity.

The effort is now being made to prepare an antitoxin at the same time efficacious and harmless. This has been attempted in two ways, by separating from the antitoxin the albuminous elements, the salts and foreign substances, and by so concentrating the antitoxic serum that the amount of foreign substances injected will be very slight. Antitoxic serum has accordingly been prepared in which 1 c. c. represents 1,200 units. It has been found, however, that this concentrated serum is not so permanent as the less concentrated. Antitoxin, however, has been prepared in a dry form with a strength of more than 5,000 units per gram. This powder remains unchanged for a long time, and is very soluble in water. It contains neither carbolic acid nor any other preservative, and is kept free from change in glass tubes. Behring believes that the use of this strong antitoxic powder, dissolved in water when about to be used, will remove all the disagreeable symptoms following the use of antitoxin.

Puerperal Insanity.

Dr. John B. Chapin, of the Pennsylvania Hospital for the Insane, states that during the past ten years the number of patients admitted with puerperal insanity slightly exceeds 30. During a period of ten years preceding 1896, the number of such cases

exceeded 90. Dr. Chapin attributes the reduction of cases of this disease during the past ten years to the adoption of the stricter antiseptic measures in obstetrical practice, which have been applied during recent days. The great reduction of cases of puerperal insanity in recent years, under the improved practice, is an additional evidence of the septic origin of this disease.

The New Albany Hospital.

The ANNALS publishes on another page the circular appeal for contributions to the new hospital building fund, with the names of the first subscribers, who have raised the fund to more than one hundred thousand dollars. A larger sum is necessary, and it is hoped that there will be a liberal response, not only from the citizens of Albany, but from neighboring localities, which are to be distinctly benefited. The amount of good to be accomplished by a modern hospital cannot be overestimated. The sense of security accompanying the knowledge that a perfectly equipped institution of this character is available for any of the emergencies of disease or accident will be ample compensation for that fortunate class of contributors who may not need its ministrations. As the public at large are directly concerned, the Board of Governors have wisely decided to open the lists for contributions of any amounts from people in all conditions of life; and it is expected that smaller contributions will soon swell the sum now assured by the generosity of those who have so promptly and liberally headed the list.

The St. Lawrence County Medical Society.

The ANNALS has received copies of the proceedings of the St. Lawrence County Medical Society for the years 1895 and 1896. The desirability of some method of increasing the interest of the physicians of St. Lawrence county in the work of their society was discussed at the meeting of May 21, 1895, and resulted in a resolution "that the secretary be instructed to issue a condensed circular report of the proceedings of each meeting of the society, and mail a copy of the same to every physician in the county within two weeks of the meeting." The immediate result of this plan has been increased attendance and greater activity at the meetings of the society.

The adoption of some such plan as that of St. Lawrence county by all counties remote from the larger cities would do much to maintain and inspire enthusiasm, and St. Lawrence county physicians are to be congratulated upon this manifestation of loyalty to their profession.

Scientific Review.

Antistreptococcus Serum. — Since Marmorek's paper (*Annals de L'Institut Pasteur*, 1895), in which he claims to have successfully inoculated rabbits against the streptococcus pyogenes, much investigation and experimentation have been done, both in the laboratory and clinique, with the antistreptococcus serum, and with quite various results. Marmorek was the first to make practical use of the serum in medicine. Recognizing the dangerous association of the streptococcus with scarlet fever, and its etiological relations to the many secondary complications, he was led to use it in a large number of cases suffering from this malady, with encouraging and favorable results. He noticed that the throat and renal complications were reduced in number, and thought the general improvement was very evident under the use of the serum.

The publicaton of Marmorek's investigation soon led others to either repeat his experiments or apply the serum in many forms of streptococcus infections; but with such variable results that the exact utility of this new addition to serum therapy is as yet a matter *sub judice*. That this would naturally be the case is evident when we bear in mind the acute character of the diseases set up by this organism, and the frequency of general infection of the patient; for under such circumstances there can be no certainty that an immunizing material will have sufficient time to produce its effects before irremediable damage is done to the body. In cases of septic infection we are not dealing, as in diphtheria, with a definite disease which enters the system by a single infection atrium; on the contrary, the course of these cases of streptococcus infection shows such considerable variation as to frequently prevent one from appreciating either their true nature or signification.

The forms of infection to which this new serum therapy has

been applied most frequently are puerperal fever and erysipelas. Charpentier collected 40 cases of puerperal septicæmia treated by the serum in the different maternity departments of Paris hospitals. In his series there were 22 recoveries and 17 deaths, a mortality of 42.5 per cent. Deducting five cases treated in extremis, and one where the results were vitiated, leaves a mortality of 35.59 per cent. Bacteriological examinations were practiced in 16 of these cases (9 recoveries and 7 deaths) with demonstration of the streptococcus pyogenes, sometimes in pure culture, at other times associated with other organisms. In none of these cases was the antistreptococcus serum relied upon exclusively, intra-uterine medication and general systemic treatment having been used in all, facts making it extremely difficult to ascertain to what degree the serum was useful. From his series Charpentier concludes that we cannot place too much reliance upon the serum after the infection has made considerable progress, and it is his belief that when intra-uterine treatment is applied early, a good result will always follow. Bar and Tissier likewise reported 13 cases, with 6 deaths.

Shober has collected 21 cases of puerperal sepsis from medical literature (*American Journal of Obstetrics, May*, 1897). The results (17 recoveries and 4 deaths) are decidedly better than those reported by Charpentier, but the nature of some of the cases in this series is open to criticism, and, furthermore, bacteriological confirmation was obtained in only three cases, a matter of much scientific importance. Recently, Norris and E. Davis (*American Journal of Obstetrics, May*, 1897) have each reported a successful recovery from puerperal fever by the use of the serum, and the latter writer also reports two cases of puerperal infection of uncertain nature, in which the results were unfavorable.

In the treatment of erysipelas, the use of the antistreptococcus serum cannot be said to be in any way better than the ordinary measures in vogue at the present time. Indeed, Mery and Lorrain, in a recent study (*Soc. de Biologie*, 19 *Mars*, 1897), have demonstrated that Marmorek's serum does not immunize rabbits against the streptococcus of erysipelas, and the conclusions of these observers receive confirmation and support in the experiments of J. C. Courmont (*Lyon Medical, April* 25, 1897).

In the number of cases reported, it is certainly surprising how small a proportion of these possess any truly scientific value from which to form a reliable opinion, and how indiscriminately the antistreptococcus serum has been used in all manners of septic conditions, without any or very little attempt to ascertain the nature of the invading organism. Possibly some of the cases where the treatment was used, and in which no beneficial effects were observed, were cases of infection other than that due to the streptococcus pyogenes. The above facts lead us to strongly believe, as Watson Cheyne writes in the *Practitioner*, May, 1897, "in all the cases which have been published, the proof that the recovery of the patient has been due to the injection is not to my mind satisfactory."

The use of the serum as a prophylactic agent will no doubt prove of much service. Mr. Watson Cheyne has reported its use as such in three cases of operations about the base of the tongue and pharynx, with admirable results. The serum was injected previous and subsequent to the operation, with a view of preventing the occurrence of septic pneumonia due to streptococcus infection, a complication of by no means uncommon occurrence after operation about these parts. A. J. LARTIGAU.

State Medicine.

EDITED BY HARRY SEYMOUR PEARSE, M. D.

Pure Water, a Garbage Disposal System and Public Baths for Albany. — A law passed by the last legislature provides for a water commission of five members for Albany, defines its duties and instructs the Common Council of the city to issue bonds to the amount of $500,000 for the perfection of a system of pure water supply. A little dissension in the board has led to the resignation of one of its members, but we trust that this will not retard the work on the enterprise; however, speed should be sacrificed to perfection of construction and completeness of detail. There was considerable contention over the selection of a system for purifying the supply which must necessarily come from the Hudson river. The large area sand filtration method was finally decided upon, and we understand that work upon the plant is soon to be inaugurated.

The city board of health, after considerable deliberation, has decided upon plans and specifications for the erection of a garbage crematory and specified a system of garbage collection. The contractors for building the plant and operating the system must complete the plant within four months of the letting of the contract, which plant shall have the capacity of disposing of thirty tons of garbage daily. Bids for the work are soon to be advertised for.

By the combined action of the common council and the health board the city is to have a public bath in one of the thickly populated districts. This action will be hailed with delight by the lower classes.

Again the Dispensary Abuse Question. — We are glad to note that the failure of the Governor to sign the bill regulating dispensary practice, and doing away with many of its present evils, has not thrown cold water upon the efforts of the advocates of the bill. On the contrary, it has acted as a decided stimulant to the fight against dispensary abuse.

Medical societies are exerting their power against it; medical periodicals have discussed it *pro* and *con* and from every conceivable standpoint. We are pleased to see that the crusade has become so general and strong, and that this strength presages the ultimate doing away with, to a degree at least, of a practice which is not only sapping the profession of its income but its dignity.

The Governor does not Favor the Inspection of Cattle. — Our executive has struck out the clause in the supply bill appropriating $15,000 to assist in the eradication of tuberculous cattle within the State, on the ground that it is an unnecessary expenditure of money.

The embarrassment and actual harm dependent upon this act is best shown by the report of the Committee on Tuberculosis of the State Board of Health, submitted to that body at its last annual meeting held May 28, 1897:

" Now that the matter of the appropriation for the continuance of this work (the destruction of tuberculous cattle) and the payment of awards for cattle condemned has been definitely settled

for at least another year, and it is now impossible for the owners of tuberculous cattle to receive indemnity from the State for such diseased animals, local health authorities are hereby warned and advised that it is their duty to prevent the sale of the meat or milk of tuberculous cattle; and they are also cautioned of the advisability of a careful inspection of all carcasses of cow beef for tuberculosis. They are also advised to require all milk dealers to furnish clean bills of health (based upon the tuberculosis test) of all cattle supplying their milk. Buyers of cattle are earnestly advised to make no purchases of cows for dairy or breeding purposes that have not been previously tested with tuberculin. This advice is given for the pecuniary protection and aid of the prospective owner, as well as for the protection of the public, from the dangers of tuberculous meat and milk.

"We have always believed and ardently advocated that the fullest protection to the public health from the dangers of bovine tuberculosis can only be secured by the State paying the owner a reasonable amount for his diseased animals; but the State ordains differently and the burden must now fall upon the individual owner, and under these unfavorable conditions we must do our utmost to protect the public health, regardless of any sympathy we might have for the cattle owner who suddenly finds himself the owner of a number of tuberculous cattle."

The State Board of Health has, then, no means at its command for the inspection of infected heads, and we understand that the Department of Agriculture pays for the work in some districts.

The owner of a condemned herd has absolutely no redress for the loss of his cattle. He cannot file claims against the State for his loss, because the court of claims has no jurisdiction to audit such claims. He can put his case before the State Board of Health, but what will it avail him? — nothing, there is no money there to make good his loss.

What will be the result? The cattle owner will soon consider the State his enemy and conceal the presence of disease in his herd in one way or another and the output of tuberculous meat and milk will increase.

Medical News.

The New Albany Hospital.— Under date of June 5th, 1897, the officers of the Albany Hospital have issued the following circular appeal to the citizens of Albany:

For many years past the hospital facilities of Albany have been inadequate in amount, and their character, considering recent advances in hospital construction, has been almost a disgrace to our city. No one has been more alive to these facts than the Board of Governors of the Albany Hospital and its Medical and Surgical Staff. But times have been hard, and the resources of our citizens have been drawn upon in many directions. At present, however, a most desirable piece of land has been secured, and a comparatively small number of friends have already generously subscribed more than one hundred thousand dollars toward the construction of new buildings, planned in accordance with the most scientific investigations, and economical administration, in which the comfort of the patients and the chances of recovery will be greatly enhanced. This sum, large as it may appear, is only about one-half of what is necessary to provide for those who have the strongest claim on our sympathy and aid because their very lives depend upon what we may do for them.

The committee would be glad, if they could, to make a personal appeal to everyone in the city who is able to contribute any amount, small or large, to this object. But this is not in their power. They are compelled, therefore, to take this general way of reaching their fellow-citizens. People may doubt the expediency of some charitable projects, but no one can have any hesitation as to the usefulness of a good hospital. Both rich and poor suffer under disease and bodily injuries and to rich and poor the hospital affords what science and skill can do to cure diseases and heal the effects of injuries.

To do this it needs sunny and airy wards, with uniform heat, perfect ventilation, and thorough drainage, with all the scientific means for perfect cleanliness and complete sterilization. It needs a sufficient number of well-trained nurses, and the attendance, whenever required, of intelligent physicians. It needs

also rooms or buildings where patients suffering under contagious diseases may be kept by themselves. All these things cost money. But they are worth far more than they cost.

To you who have never known illness personally we say, show your thankfulness for this by providing for those who have not been so fortunate. To you who have suffered under disease, show your sympathy for those in the like evil case.

"Do good unto thy friend before thou die, and according to thy ability stretch out thy hand and give him."

We confidently appeal to everyone whom this letter may reach to contribute to this most charitable work in accordance with his means, and to signify his willingness to do so to any one of the joint committee. Any contribution, large or small, may be sent to Charles R. Knowles, Esq., Treasurer, Commercial Bank Building, Albany, N. Y.

JAMES MCCREDIE, ALBERT VANDER VEER,
WM. L. LEARNED, HENRY HUN,
GUSTAV MICHAELIS, SAMUEL B. WARD, *Secretary*,
Joint Committee of the Governors and Staff of the Albany Hospital.

The following is the list of subscribers to date:

Jas. B. Jermain	$10,000	Sarah J. Finch, M. D.	$1,000
Abby Townsend Lansing	10,000	Anna Vandenbergh	1,000
In memory of Thomas McCredie, by Margaret McCredie Bullock, James McCredie, Donald McCredie	10,000	Chas. L. Pruyn	1,000
		W. G. Macdonald	1,000
		J. H. Van Antwerp	1,000
		Susan Y. Lansing	1,000
		Horatio N. Snow	1,000
John G. Myers	5,000	Lydia L. Hand	1,000
Robert C. Pruyn	5,000	Marcus T. Hun	1,000
Albert Vander Veer	5,000	Mabel Learned	1,000
Dudley Olcott	5,000	Jesse W. Potts	1,000
John J. Olcott	5,000	Sarah A. Lansing	1,000
Frederic P. Olcott	5,000	Lydia Visscher	1,000
E. D. and Sarah F. Sumner	5,000	Dr. Wm. Hailes	1,000
Theodore M. Amsdell	5,000	James P. Boyd	1,000
Henry Hun	3,000	Howard Van Rensselaer	1,000
Abby Spencer Lansing	2,000	Dean Sage	1,000
J. Townsend Lansing	2,000	Wm. H. Weaver	1,000
Wm. L. Learned	2,000	James B. Lyon	1,000
Grange Sard	2,000	Esther E. Taylor	1,000

J. Howard King	$1,000	Mrs. Wm. H. McClure	$500
Anthony N. Brady	1,000	S. O. Shepard	300
John M. Bigelow	1,000	Julius Saul	250
Wm. J. Walker	1,000	W. B. Van Rensselaer	250
Chas. Gibson	1,000	Learned Hand	250
Mrs. Anna Parker Pruyn	500	Miss Margaret J. McElroy	250
Grace H. Learned	500	The Misses MacNaughton	150
Sarah B. Potts	500	Miss Huybertie Pruyn	100
Caroline G. Hun	500	John E. McElroy	100
Elizabeth E. Taylor	500	Mrs. Anna Edwards	50
A. Bleecker Banks	500		

The Albany Club, proceeds of Poster Exhibition, $268.21.

Miss Ellen Campbell has given $500 with which to furnish two rooms.

— A dinner in honor of his fiftieth anniversary as a practitioner of medicine was given, June 9, 1897, to Dr. Henry D. Didama, Dean, by the Faculty and the Alumni Association of the College of Medicine, Syracuse University, at the Yates Hotel, Syracuse. The occasion was also celebrated as the twenty-fifth anniversary of the opening of the College of Medicine, with whose inception and progress Dr. Didama's life has been so intimately interwoven. A large party assembled. Dr. M. L. Bennett, president of the Alumni Association, presided, and Dr. Nathan Jacobson officiated as toastmaster. Toasts were responded to by Dr. E. D. Ferguson, Troy; Chancellor Day and Dean Brooks, of Syracuse University; Dr. A. Vander Veer, Dean of the Albany Medical College; Dr. Matthew D. Mann, Buffalo; Rev. George R. Spalding, Syracuse; Dr. Wm. S. Ely, Rochester; Drs. Robert L. Morgan, Brace W. Loomis and John Van Duyn, Syracuse; Hon. Frank Hiscock, Dr. Henry O. Marcy and Hon. Carroll E. Smith.

All joined in doing honor to the long, active and honorable career of the guest of the evening. In referring to Dr. Didama's connection with the Albany Medical College, Dr. Vander Veer echoed the sentiment of its alumni, who have felt so often the influence of his work and interest. He said, in part:

"Turning over the archives of the Albany Medical College, I find, written in bold characters, the name of Henry Darwin Didama, Perryville, Madison County, New York, October 2, 1844, for the session of 1844 and 1845, and on October 6, 1845, for the session of 1845 and 1846. He graduated from the Albany

Medical College January 27, 1846. The faculty of the Albany Medical College desires to go on record as recognizing in Dr. Didama one of our foremost and successful professional brethren. As an alumnus, he has demonstrated on many occasions his loyalty to the course pursued by his *alma mater*. In the early organization of the Alumni Association he was the first to respond; he became president, and continued his interest by attending many of the meetings from year to year. Dr. Didama is the link uniting our two institutions in a strong bond of earnest desire to ever advance the right and best in our profession."

Obituary.

DR. BENJAMIN FRANKLIN SHERMAN

died at his home in Ogdensburgh, N. Y., May 30th, 1897, aged eighty years. In a future issue the ANNALS will publish an account of his long and useful life; for the present extending an expression of sympathy and condolence to his family and to the community he served so faithfully and so well.

DR. WILLIAM H. LEMROW.

Dr. William H. Lemrow died at his home in Troy, N. Y., Monday, May 17th, 1897. Dr. Lemrow was born in Albany, August 6, 1864. He graduated from the Albany Medical College in 1886, and was appointed assistant physician at the Marshall Infirmary. He practiced in Amsterdam, and afterward removed to New York, where he became chief of the medical staff of the *New York Recorder*. When this newspaper discontinued publication, Dr. Lemrow settled in Troy in general practice. He is survived by a wife and one child.

— Dr. LYMAN M. TUTTLE, '59, died at Holyoke, Mass., April 26, 1897, aged sixty years.

Book Reviews.

The International Medical Annual and Practitioners' Index: A Work of Reference for Medical Practitioners. By forty-one contributors. Fifteenth volume. New York and Chicago: E. B. Treat & Co. (Pp. 724. $2.75.)

The time is past when any extended statement of the character and value of this work is needed. It now comes every year as an expected and

welcome addition to the library. The first hundred pages are devoted to the newer remedies, thus proving the marvellous advances in *materia medica* which are continually being made in spite of the general tendency to limit the administration of drugs. The serum treatment of disease, and the use of animal extracts, receive the consideration due them. The rest of the volume is a resumé of the therapeutic progress of the preceding year.

The value of such a work lies in the practicality, conciseness and clearness with which the abstracts are made, and in these respects the present volume maintains the reputation of its predecessors. The publishers have this year omitted the special articles which were often of considerable value.

Surgical Hints for the Surgeon and General Practitioner. By HOWARD LILIENTHAL, M. D., Assistant Attending Surgeon to Mt. Sinai Hospital, New York City. International Journal of Surgery Company. 1897.

This small volume of 28 pages is replete with observations and suggestions, which are valuable from their practical character, as determined by the experience of the author. Though they deal generally with the smaller matters, they are no less important, as these are just the things which are most often neglected.

Current Medical Literature.

Insolation.— Dr. Henry Jackson presented a paper upon this subject at a meeting of the Suffolk District Medical Society, November 18, 1896. (*Boston Medical and Surgical Journal, February* 4, 1897.) He described four distinct conditions resulting from exposure to excessive heat:

(1.) Exhaustion, with normal temperature.

(2.) Collapse, with subnormal temperature.

(3.) Intense fever, combined with furious acute symptoms.

(4.) A continued fever, with symptoms suggesting a continued fever similar to typhoid.

Twenty-two cases are reported. In all severe cases, with one exception, the pupils were contracted to a pin-point size. A secondary rise of temperature, after the fever had been reduced by cold, was not unusual. Of great practical importance is the fact that in the cold bath there may be a fall of temperature to a point far below normal, accompanied by symptoms of serious collapse. Therefore, in using a bath, the rectal temperature must be taken frequently; and when the thermometer registers 102° the patient should be removed from the bath, as the temperature usually continues to fall after he has been returned to his bed.

In the discussion which followed, Dr. Buckingham referred to a further classification of cases of insolation into those with a high, tense pulse, and those with a weak pulse. In the former there is no danger of treat-

ment by cold, but in the latter there may be. During the attacks of the summer of 1896, all of his cases had exceedingly poor circulation. Although an ice-cap was applied immediately upon admission to hospital, the patient was not placed in a bath until the circulation was restored, and strychnine and brandy were given until the pulse was strengthened. Dr. Greenleaf regarded the use of alcohol as hardly wise, and favored digitalis and strychnine.

Dr. George F. Chandler (*New York Medical Journal, June* 5, 1897) describes the treatment adopted in St. Vincent's Hospital, New York City, during the hot season of 1896. Between August 7th and 14th, inclusive, 197 patients were treated, with a mortality of 12. The ambulances were well supplied with ice, which was kept about the patient's head. Upon admission he was stripped, and his body was covered with a sheet, upon which were placed small pieces of ice. Large quantities were laid closely about the head. Ice-water from dippers, at a distance of from five to ten feet, was dashed with force upon the patient. This was continued about thirty or forty minutes. The most efficacious stimulant was a fine stream of ice-water, poured upon the forehead from an elevation, and continued for only one or two minutes at a time. A hypodermatic injection of forty minims of tincture of digitalis in one dose was administered at the same time. In plethoric patients, with high arterial tension, venesection was practised, and the digitalis was given later in smaller doses. When the temperature reached 104° F., the patient was laid in a bed, covered with blankets, and hot bottles were placed about him. In cases where the temperature only reached 105° or 106° F., this course of treatment was employed upon its being reduced to 102° F. At the first indication of consciousness, whiskey was offered. Strychnine was never given. Convulsions were treated by chloroform. When the secondary rise of temperature occurred, a sheet, wrung from ice water, was spread over the patient, and kept wet until the temperature became normal. In cases of prolonged unconsciousness, patients were nourished and stimulated by means of the stomach tube. Caffein and whiskey were chiefly used, but other cardiac stimulants were given when necessary. Artificial respiration was kept up for long periods, with surprising results. Morphine was never used. The after-treatment consisted of light diet, stimulants, fresh air, the ice cap, and sudorifics, such as ammonia — preferably the spirits of mindererus — in large doses.

The Absorption of Fat During Treatment with Carlsbad Mineral Water.— In the *Berliner klin. Wochenschrift, No.* 21, 1897, Dr. Friedrich Kraus, Jr., records observations upon this subject, and cites the results of experiments upon three patients. Daily estimates were made of the amount of fat in the food injected, and in the excreta. The diet consisted of milk, butter, meat, potatoes, eggs, cheese, white bread, oatmeal, wine, tea, salt and sugar. The three cases were, respectively, chronic intestinal catarrh, chronic arthritic rheumatism and gastric ulcer. In the first and third

cases there was pronounced gain in weight; in none of the cases were there unfavorable effects. The ratio of the fats in the stool to the amount ingested varied between two and eight per cent.

The limited number of cases does not justify the conclusion that all patients who take a course at Carlsbad should receive a fatty diet. Dr. Kraus recommends fat with the lowest melting point, as that of butter, cream, cheese, milk, and the plant fat, sesame oil, as these have been shown by V. Noorden, Rubner, Müller and others to be most susceptible of absorption. The fats of lard and meat may preferably be avoided. Contra-indications to the use of fat are found in cases showing a qualitative or quantitative anomaly in the bile or intestinal secretions; in diseases of the small intestine, and in high degrees of atony. Among the advantages to be gained by the allowance of fat is the extension of the diet, with the avoidance of the distasteful uniformity of strictly albuminous food.

Serous Meningitis Due to the Pneumococcus. —(Charles Levi, *Archives de Médecine Expérimentale, January*, 1897.) After pointing out that purulent meningitis, due to the pneumococcus, is a well-known pathological entity, the author quotes from Hutinel as to the possibility of there being two sorts of inflammation in the meninges as in the pleura, viz., a serous and a purulent inflammation. He then reports two cases of serous meningitis in which the pneumococcus was present in the exudate.

Case one occurred in an infant of three months, who showed, before death, meningeal signs, as inequality of the pupils, conjunctival injection and rigidity of the neck, but no pulmonary signs. At the *post mortem* a broncho-pneumonia was found, also a serous exudate under the arachnoid at the convexity. There was great congestion of the surface of the brain. Inoculation of a mouse with the exudate caused its death from a general pneumococcus infection.

The second case was that of a child of six and one-half months, with a double broncho-pneumonia, but no meningeal symptoms. The autopsy showed the same condition at the vertex as in the last case, and, beside this, a well-marked internal hydrocephalus. Cultures from the subarachnoid exudate and the hydrocephalic fluid both showed the pneumococcus. After reviewing previous literature bearing on the subject, the author concludes that there exists a form of meningitis caused by the pneumococcus, and having only a serous, not a purulent, exudate; that this form is generally due to a mild infection, and often gets well; that the symptoms may not differ from those of an ordinary purulent meningitis. G. B.

The Application of Radioscopy to Diseases of the Thorax.—(Ch. Bouchard, *Revue de la Tuberculose, December*, 1896.) Bouchard begins by describing what is seen in a normal thorax by means of the X rays. He describes the picture as showing the skeleton of the chest (ribs) and running down the center a black line, representing the spinal column. To the right of the column, about the mid-dorsal region, is a shadow cast

by the heart, and here pulsation can be seen. Finally the shadow cast by the liver can be seen ascending and descending with respiration. The mediastinum does not show, as it is masked by the spinal column.

The following pathological conditions were investigated:

1. *Pleurisy* — Three cases. — The part occupied by the fluid showed as a dark patch in contrast with the normal side. If any lung was left above the effusion this showed clear. The dark portion could be seen disappearing as the effusion disappeared. The dark patch corresponded to the area of dullness, as shown by percussion. In some of these cases the displaced mediastinal tissues cast a shadow on one side of the spinal column. In one case, as the fluid disappeared, it was noticed that the apex of the lung remained dark, and this was subsequently shown to be due to tubercular infiltration.

2. *Tuberculosis.* — In all cases of tuberculosis the consolidated area casts a shadow. In two of his cases he was able to see clear areas in the center of the solid ones, and here the physical signs were those of cavity. In other cases with the physical signs of cavity the radioscope showed nothing. In another case, where the symptoms pointed to tuberculosis, but in which no physical signs were present, the radioscope showed a dark area at one apex, and subsequently dullness developed there, and T. B. were found in the sputum.

3. *Miscellaneous conditions.* — He reports a case of inversion of the heart in which this could be made out with the radioscope, and one or two cases of aneurism, in which the tumor could be made out. He concludes that the radioscope is extremely useful for the physician as well as for the surgeon. G. B.

Practical Therapeutics.

Creosote and Cod Liver Oil in Tuberculosis.— (Schtangeieff, *Revue de la Tuberculose, December*, 1896.) At the Congress of Russian Physicians in memory of Pingoff, S. spoke of his experience with creosote and cod liver oil in tuberculosis.

He first mentions the experience of his colleagues at Yalta (Crimea). Their opinions are thus expressed: creosote and guaiacol only act as symptomatic remedies, and their action is most marked in pulmonary tuberculosis. Their action is slight in glandular tuberculosis, doubtful in bone or joint tuberculosis, and nil in acute miliary and meningeal tuberculosis. Both preparations act especially well in chronic tuberculosis.

All symptoms are not equally influenced. Of eleven members who took part in the discussion, only four noticed any effect on the fever, eight on the cough, nine on the quality and quantity of the expectoration, seven on the appetite, eight upon the general nutrition. Unfavorable phenomena observed were dyspepsia and hæmoptysis. Creosote and guaiacol are, therefore, contra-indicated in all forms of gastro-intestinal trouble, and also where there is a tendency to hæmoptysis. The two sub-

stances have no effect on the number of tubercle bacilli, and are useless as prophylactics. The carbonate is the most agreeable, but the least active, preparation. Four to eight grammes is the dose.

In examining into the percentage of cure in tuberculous cases observed over 20 years, S. finds that the percentage is just about the same now as it was before creosote was introduced. With regard to cod liver oil, the observer quotes not only an increase in weight, but a rapid disappearance of fever, in a large number of cases. This was observed in one-tenth of the cases treated with a dose of 3-5 dessertspoonfuls daily. In the discussion which followed, Tchernoff spoke against cod liver oil, saying that it often produced gastric disturbances, and that he now used cream instead, with good results. G. B.

Pain and its Therapeusis.—Dr. S. V. Clevenger, in the *Journal of the American Medical Association, January* 20, '97, writes an interesting paper on "Pain and Its Therapeusis." He says that pain is the cry of the nerve for purer blood, and that it may be the cry for less blood, also; maintaining that all painful states may include the conditions of irritation, too much or too little nutrition, separately or combined in various ways. He is loud in his praise of lactophenin, placing it far above the various analgesic drugs now in use, and predicts that it is to supersede the entire array. It is, according to Dr. Clevenger, non-toxic, producing a feeling of comfort, which has been noticed by many physicians; has no heart depressing effect: is a definite antipyretic and analgesic, and incidentally a hypnotic. The minimum dose is 5 to 10 grains daily, the maximum 45 grains. It has a wide range of compatibility, and may be combined with caffein, quinine and salicylic acid. Unpleasant effects are wholly absent.

H. S. P.

Treatment of Whooping Cough.—Moizard, in *Internat. Centralbl. f. Laryngol., Rhinol.*, etc., gives the treatment of whooping cough by insufflating an antiseptic powder into the nose. M. recommends, again, the method of Michael, with which he achieved splendid results in a great many cases. He uses the following powder, which he has blown into the nose four or five times daily:

℞	Pulv. benzoin,	
	Bismuth salicyl, āā	10,0
	Quinin sulph.,	2,0
M.		

C. F. T.

Gastralgia.—

℞	Morph. hydrochlorat,	gr. iij
	(or codeinae,	gr. vi)
	Cocain hydrochlorat,	gr. v
	Tinct. belladonnæ,	f ʒ i
	Aq. amygdalæ amaræ,	f ʒ v

M. Sig: Ten to fifteen drops every hour. When pains are very severe three doses of ten drops each within an hour.—*Ewald.*

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Original Communications.

THE QUARANTINE, ISOLATION AND CARE OF CONTAGIOUS DISEASES.*

BY LEWIS BALCH, M. D.,

Professor of Medical Jurisprudence and Hygiene, Albany Medical College.

At a recent meeting of the Board of Health, I was directed to prepare a statement relating to the quarantine of contagious diseases, which could be read before the medical societies, explaining generally the power imposing quarantine, and what the board wished done by physicians in the care of contagious diseases, that they might render their valuable aid in lessening the presence of such cases in the city. What brought about this action of the board was the variance shown by physicians in the present outbreak of scarlet fever in the understanding of what quarantine is.

The authority under which a legally constituted board of health acts is what is known as the "police power." This power is an absolute one within certain limits, and gives the State the control over the property of its citizens under the provisions of the Constitution, which may be stated in the words of article 1, section 6 of the Constitution of this State to be: "Nor shall any person be deprived of life, liberty or property without due process of law; nor shall private property be taken for public use without just compensation." Laws, therefore, which confer the police power upon public officers or boards are constitutional, provided they are made in conformity with the provisions of the Constitution. In this State the whole legislative power of the people is

* Read before the Albany County Medical Society, March 24, 1897.

possessed by the Legislature, subject only to the express restrictions of fundamental laws. (Bank of Chenango v. Brown, 26 N. Y. 467; People v. Mayor, etc., of Brooklyn, 4 Comstock, N. Y. 419; Brewster v. City of Syracuse, 19 N. Y. 116; People ex rel. Wood v. Draper, 15 N. Y. 549; Cooley on Constitut. Lim. 129.)

While in general it may be truly said that private property cannot be taken for public use without compensation, it must be clearly understood what is the public use, or, in other words, how is the property to be converted to the public use? Therefore, we find that the destruction of property in cases of dire necessity, of which those of fire and pestilence are very prominent examples, is not a taking of private property for the public use within the meaning of the Constitution. (Stone v. Mayor of N. Y., 25 Wendell, 157; Russell v. Mayor of N. Y., 2 Davis, 485; Clark v. Mayor of Syracuse, 13 Barbour, 35; Weil v. Schultz, 35 How. Pr. 7; Hill v. Thompson, 48 Superior Court, 481; Struve v. Druge, 70 N. Y. 530.)

"The Legislature may pass many laws, the effect of which may be to impair or even destroy the right of property. Private interest must yield to the public advantage." (Phelps v. Racey, 60 N. Y. 14; Vanderbilt v. Adams, 7 Cowen, 348.)

All laws and ordinances for the protection and preservation of the public health are enacted by virtue of the police power reposed in the Legislature. (Passenger Cases, 7 Howard [U. S.] 414, and cases above cited.)

The Legislature, in the exercise of its constitutional authority, may lawfully create boards of health, and may confer upon them the power to enact sanitary ordinances having the force of law, within the districts over which they have jurisdiction. (Polinsky v. The People, 73 N. Y. 65; Cronin v. The People, 82 N. Y. 318; City of Rochester v. Collins, 12 Barb. 559; People v. Cox, 7 Hun, 214; Roberts v. Ogee, 30 Ill. 459; Underwood v. Green, 3 Robertson, 86; Cooper v. Schultz, 32 Howard, 107; Coe v. Schultz, 47 Barb. 64.)

In pursuance of this power, the Legislature did, by chapter 297 of the Laws of 1885, confer upon the Board of Health for the city of Albany, which by that act was created, power to care for and guard the public health of the city, by having jurisdiction over

" all persons and things arriving in said city from infected places, or which, for any cause, are liable to communicate contagion; to require the isolation of all persons and things infected with or exposed to contagious or infectious diseases; * * * to prohibit and prevent all intercourse and communication with or use of infected premises, places and things; and to require, and, if necessary, to provide the means for the thorough purification and cleansing of the same before general intercourse therewith, or use thereof, shall be allowed." (Chap. 297, Laws of 1885, sub. div. 2, sec. 3.)

And further powers were given the board, for it can " make and from time to time publish, in such manner as to secure early and full publicity thereto, all such orders and regulations as they shall think necessary and proper for the preservation of life and health " (sub. div. 6, sec. 2); and that the rules and regulations thus made are not mere idle words, but must be obeyed, the board can " impose penalties for the violation of, or non-compliance with, their orders and regulations, and to maintain actions in any court of competent jurisdiction to collect such penalties, not exceeding one hundred dollars in any one case, or to restrain, by injunction, such violations, or otherwise to enforce such orders and regulations." (Ibid, sub. div. 9, sec. 2.) These rules, as has been said, have the force of law, and it is apparent, from what has just been read, that full power to compel obedience to its mandates is vested in the Board of Health.

One of the most important duties charged to the board is the protecting of the people from the spread of contagious disease. The law does not say how this shall be done, further than what appears above, but the rule of law which says that, where power is given to do any act, all power necessary to make that act effective is also conferred, holds good in this instance. Acting, therefore, under this authority, the board has made certain rules and regulations, duly published the same, and requires attention to be given them.

To summarize up to this point, we find:

First. That the police power is constitutional.

Second. That this power is vested in the Legislature.

Third. That the Legislature can delegate by law this power.

Fourth. That it has so delegated and conferred it upon boards

of health, but only and solely in matters which pertain to the public health.

Fifth. That it does not delegate it to others than regularly constituted boards of health in matters affecting public health, and, therefore, citizens cannot assume such power or enforce any order under it made or given by themselves.

Bearing in mind these premises, it now is to be considered what the Health Board of this city has done to carry out the duty of protecting the public in the matter of contagious disease. Physicians are required to report to the board, within twenty-four hours after diagnosis has been made, the presence and nature of certain scheduled diseases. For this purpose, the board has issued postal cards, properly printed, so that the doctor has but to fill in the date, place, number and character of disease, sign his name and mail the card, thus saving him all trouble possible, and all expense. This rule is generally complied with, but there is a slight matter in its observance to which I wish to call attention, and that is that the card should be signed by the doctor reporting. Sometimes this little part is forgotten, and while the officers of the board are fairly familiar with the handwriting of the different physicians, still at times it is a matter of doubt as to who is in charge of the case, and naturally this causes no little bother. I merely mention this to ask that more care be exercised by those who inform the office that a contagious disease is present.

The necessity of these reports is easily understood. Unless they are made, it is impossible for the board to know where, and of what nature, contagious disease is in the city, and unless it does know, proper precautions cannot be taken against its spreading.

To give an idea of what is done upon the receipt of one of these postals, it may be said the name of the reporter, the date, number and character of disease, place, house number and street are at once entered in a book kept for that purpose. An officer then takes a circular of printed directions concerning quarantine to the house where the patient lives, and when leaving this, he ascertains whether children in the same house attend school, and if so, what school. If the case is scarlet fever or diphtheria, the officer puts a distinctive card on the outside of the house, and, returning to the office, he fills out another postal, directed to the principal of

the school attended by these children, setting forth that such and such a disease exists at such and such a place, from which children attend the school, and stating that these children must be excluded until such time as danger from contagion is past. The entry is then carried out in the contagious disease book by noting that card was put up, such a school notified, and the initials of the officer signed to the report. Upon recovery, if fumigation is done by the board's officers, the date of this is entered in a column reserved for it, and the official record of the case is complete.

The late action of the board in making the regulation that cases of scarlet fever and diphtheria shall be placarded, allows of the records being fuller than before, as the card can only be removed by an officer of the board. The office is notified when the case ends, and fumigation is at once performed.

So much for what the board does. Now for the duty of the physician. Regulation 20 of the Sanitary Code says: "Every parent, guardian, physician, or other person or persons having charge of, in their families or under their care, any person sick with cholera, small-pox, diphtheria, scarlet fever, typhoid or typhus fever, or other contagious or infectious disease, or every parent, guardian, physician, or other person or persons having knowledge that any person in their charge, in their family or under their care, shall have been exposed to such contagious disease, shall immediately report the same to the health officer or inspectors of this board. Any violation of the provisions of this section shall be punishable by a penalty of twenty-five dollars."

Regulation 21 reads: "No person or persons having the charge or control of any child that is or has been sick with small-pox, diphtheria, scarlet fever, typhus fever or measles, or who has been exposed to such disease or diseases, shall permit such child to attend any school or expose itself on any street, or in any public place, until the health officer shall be satisfied that the period of contagion has passed. Any violation of the provisions of this section shall be punishable by a penalty of twenty-five dollars." Other orders follow, relating to the wearing or having of infected clothing, and concerning the funeral in case of death, penalties also being provided for neglect to comply with the rules made and provided.

In the regulations quoted the board, under the power granted it by the law, has stated what all persons knowing of or having charge of contagious disease must do, and for failure to notify the health authorities a penalty is enacted. Also is a penalty imposed for breaking quarantine, for section 21 clearly states that quarantine cannot be raised unless the health officer is satisfied that all danger to the public has passed. Therefore, when a physician is called to a case of contagious disease, as soon as he makes the diagnosis, his duty is to report the presence of the case to the Health Board. He, as well as all others, knows that isolation is the best preventive against the spread of the contagion, but he has not the power to order this isolation, this quarantine, his orders to that effect, if he gives any, being merely equal in weight to any other direction he may give his patient, for no penalty ensues if they are disregarded, as he has no power under law to enforce them. Therefore he reports to those who have the power, upon whom the law confers full and ample power to not only order quarantine, but to enforce it, and thus he does his duty not only as a physician, but as a citizen. If he fails in this duty, he subjects himself to punishment, either by the board imposing the penalty set forth in its regulations, or by being prosecuted for a misdemeanor, in which case, should conviction follow, the court can impose a penalty not to exceed a thousand dollars, or imprisonment not to exceed six months, or both. I wish to impress upon you, gentlemen, the fact that orders and regulations made by the Board of Health, in accordance with law, have the force of law, and therefore violation or refusal to obey just and reasonable rules of the board is an offense against law, and not a mere defiance of certain men or officials.

The Board of Health, then, duly constituted and appointed, having conferred upon it the police power of the State by the statute creating it, alone orders quarantine. It may be asked, but the regulation quoted says report to the health officer, and that he must be satisfied that all danger of infection is over before quarantine can be raised: How does the health officer have the power to "bind and loose?" The law makes the health officer the executive officer of the board, and to be instructed by it, from time to time, in his duties. He is to carry out its orders, and has, therefore, the authority to act in all matters governed by the

board in accordance with the regulations made by the board, unless he is directed to do differently. He confines himself to his orders, and as long as he does that he is protected by law in what he does.

As the board, by its authority, alone imposes quarantine, so it alone has the power to raise it and give pratique to those persons and places that have been under the ban. A physician, therefore, while he knows just as well as the health officer when a patient has recovered from a contagious disease and is no longer a menace to his fellows, has no power to give permission to that patient to go out, or in any way to break quarantine. To do so would be to violate the regulation above quoted, and to subject himself to the penalty provided. And not alone himself, but he subjects the patient or the patient's legal guardian to a like penalty, if they act under his permission, for he has not the power to grant such permission, and their only defense is they acted on his advice and were in ignorance of the law, but ignorance of law is no defense in law.

From late experience, I do not think this matter is understood by physicians. In two cases where I have been notified, recovery had taken place, and it was wished to have the placard removed. The doctors in attendance had given permission for the patient to leave the room, and either go all over the house or to go out, coupling the latter permission with the caution that the walk in the street had better be in the evening until the card was taken down. In both cases this freedom was granted by the doctor before fumigation of the isolated rooms, and yet the patients, thus relieved of quarantine, continued to occupy the infected rooms. And doctors and the public keep asking why the Board of Health does not stop the spread of disease! How is it possible, when those whose study should make them thoroughly alive to the great need of caution are so lax?

> "One woe doth tread upon another's heel,
> So fast they follow."

And will continue to do so unless more intelligent care is taken by those in charge.

To summarize again up to this point, we find:

First. That the Board of Health has made regulations for the reporting of contagious disease.

Second. That physicians and others must so report.

Third. That upon notification being received by the board of the presence of contagious disease, quarantine is imposed, and in certain cases proclaimed to the public by the placing of cards upon the house.

Fourth. That as the board imposes the quarantine, it alone has the power to raise it and grant pratique.

Fifth. That penalties have been provided for violation of these regulations, and further punishment may follow by prosecution for misdemeanor.

Sixth. That the board has the power to remove articles infected and destroy them, without compensation to the owners, and it alone has that power.

Seventh. That it fumigates and takes such other precautions as it considers necessary when notified of the termination of a case.

There is one other point to which I ask your attention, and then I will bring this over-long paper to a close; and that is, How should the room in which a patient is to be confined for contagious disease be prepared? As long as we can take some portion of the house and isolate it from the rest, the patient can ride quarantine safely, and other inmates, so long as they have no communication with the sick or the immediate attendants, can follow their ordinary avocations, without endangering the public health, but this can only be so where proper precautions are taken.

And first the room. As it is a well-known fact that fabrics which are of a soft texture, such as plush covers of furniture, heavy hangings, carpets, thick woolen dresses, and the like, absorb and retain contagion easier and longer than cotton or linen goods, the first procedure after the diagnosis is made is to strip the room. Up with the carpet, down with the hangings, out with upholstered furniture. Bare to the walls and boards. On the floor put some old carpet or pieces of carpeting, some old rugs or some such articles. These are of no value, and can be destroyed. If the light is too strong by reason of the removal of the stuff curtains, put up dark shades. They are non-absorbent, and if considered best to destroy them, are not expensive. Some cane-bottom chairs, and, if a sofa is needed, a cheap cot, with shuck mattress, makes a very convenient lounge. If there is a lounge

which is not of value, it could remain, and be taken away afterwards, or if its covering is absorbent, the cover must be removed, after fumigation, and burned, and then the frame can be sent to the upholsterer for another.

Doors which communicate with other rooms not used by the sick, should be caulked with cotton, or, what is better, have strips of paper pasted over all cracks. The door leading out into the hall, if only one room is used, should be protected by sheets hung on the outside, so arranged as to cover the door. These can be kept moistened with a disinfectant. If there is a passageway into which the door opens, it is better to hang the sheet-screen a short distance from the doorway. This forms a sort of ante-chamber, and in it a table can be placed on which the food and all other necessaries may be placed, thus guarding from contact those serving from those nursing the patient. Where there is no passageway, it is well, by light pieces of wood, to extend the sheet-screen from the door, so as to create a small space between it and the door, securing in this way the ante-room, but this screen should reach from floor to ceiling.

The room has been prepared. Now for the nurses. Their dress, when in the sick-room, should always be some cotton or linen gown of a light color. Not only do these absorb less than woolen garments, but can be, by boiling, thoroughly disinfected and not injured. And if the case is a bad one, it is well to protect the nurses' hair by having caps worn that cover it. Common sense, gentlemen, must come into play in handling these cases. You cannot shut up your nurses all the time, confining them to the sick-room, without rendering them more liable to take the disease. Therefore, some way to give them fresh air and exercise must be devised which will be without danger to those they happen to meet. They may, then, in another room, or in the improvised ante-chamber, some place which has not been directly exposed to the contagion, change their clothes, leaving off all clothing that has in any way been exposed, and putting on uncontaminated garments. The fresh clothing should be brought them at the time they wish to change, and be taken away again when they return to resume their labors. Thus prepared, the nurse can go out for air and exercise.

When the time has come, in the opinion of the attending

physician, to once more allow the patient to mingle with other people, the health officer should be notified, that he may visit and decide whether pratique should not be given; and having, after examination, decided that all is well, the patient is dressed in fresh, clean clothing, after having had a disinfecting bath; the nurse and attendants change their gowns, leaving all infected articles in the sick-room; they vacate their recent quarters with their change, turning over to the representatives of the health board all the room contains for them to work their will upon, and this the officers do, putting into one pile or place all articles that will have to be removed for destruction, and in others those that either will be safe after the disinfection, or which may be sterilized by boiling. The fumigation is done, the room closed, and so left until next day, when the condemned articles are removed; the wrath-producing placard is taken down, and the stern grasp of the health board released from the house and its inmates " by due process of law."

To sum up for the last time, we have:

First. The preparation of the room.

Second. The isolation of it from the rest of the household.

Third. The care necessary in allowing air and exercise to those nursing, and the clothing they should wear in the sick-room.

Fourth. The reporting the termination of the case to the health officer, that he may raise quarantine and grant pratique.

Gentlemen, what I have been sketching for your guidance in the care of these cases can but be carried out where fortuitous circumstances give both means and space. When among those who are not so well blessed with the gifts of fortune, but who must not only " earn their bread by the sweat of their brow," and be satisfied with restricted quarters, contagious disease makes its appearance, we can only do the best we can to lessen contact with the sick, and control the spread of the contagion. We know well that much cannot be done that should be done, but as long as the condition of sanitary matters concerning the care of contagious diseases remains what it is to-day, we can but hope that the spread of the disease will be limited — we cannot hope to prevent it.

The board has, by resolution, asked that the Common Council cause estimates to be made for the establishment of a contagious

disease hospital for those ill with such diseases, other than small-pox. The plan that has been suggested is for the city to maintain such a hospital, and thus furnish quarters, subsistence and medicines. To this hospital cases of contagious disease, which could not be cared for in their homes with safety to the public, could be taken, with some member of the family to act as nurse, and the family physician to attend. The matron in charge should be a trained nurse, who could give valuable suggestions in the care of the patient. This would be a saving of expense to the family, for only the doctor would be a charge upon it, the city giving all necessary for the treatment and sustenance of patient and nurse. It would be not only better for the city at large, as the danger of spread of the contagion would be stopped, but it would be far better for the sick, as they could be treated in a place with the best of sanitary and hygienic surroundings. I have for years recommended some such plan, but, although the board has this year adopted and recommended the subject to the consideration of the Common Council, unless help is received from those who know the practical value of such an institution, and who, by their experience, know the value it would be to the health of the citizens — I mean the physicians of Albany — the chance for a successful outcome of the recommendation of the board is but slight. Will you, then, gentlemen, aid the health authorities in this, their effort to lessen contagious disease?

14 WASHINGTON AVENUE.

THE TREATMENT OF TAPEWORM.*

BY J. S. BIRD, M. D.,
Hyde Park, N. Y.

Mr. President and Members of the Society: The subject on which I have some remarks to offer is the treatment of tapeworm. My reasons for bringing this matter before you at this time are as follows:

First. If my own experience, in a somewhat limited field, is any criterion, cases of tapeworm are not of such very infrequent occurrence; cases must present themselves, every now and then, in the experience of every practitioner.

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* Read before the Dutchess County Medical Society, January 13, 1897.

Second. From what I have been able to gather from authorities, and from observation, there does not seem to be, in these cases, any fixed and definite method of procedure, or any remedy which, to the exclusion of all others, is universally recommended.

Third. The prescriptions usually given for tapeworm are exceedingly unpalatable mixtures, always hard to swallow, and sometimes are rejected by delicate stomachs.

Fourth. These prescriptions, even when made by our most experienced and successful practitioners, are unsuccessful, in quite a percentage of cases.

In view of these considerations, I shall make the following points:

First. That it is possible, and therefore desirable, to have a fixed and definite, and yet simple, method of procedure, which can, almost invariably, be carried out.

Second. That while nature has provided us with the tapeworm, nature and the pharmacist's skill have also provided us with a remedy, the action of which, in the destruction of tænia solium, may be considered as much a specific as quinine is so considered in the breaking up of an ordinary fever and ague, and that, consequently, as an almost invariable rule, there need be no failures in our prescriptions for these cases, and that, therefore, there should be none; and furthermore, that it is a waste of time to experiment with any other remedy.

Third. That this remedy can be administered in a form entirely agreeable and perfectly tasteless.

In order to still further introduce this subject, and also to show that these nauseating doses are still advocated by some clinical teachers, in face of the acknowledged fact that they sometimes cause gastric disturbance, allow me to quote from the last October number of the *New York Post-Graduate.* In this journal, Dr. Chapin, in a clinical lecture, recommends this mixture for tapeworm: Extract of male fern, ℥ij; glycerine, ℥j; mucilage, sufficient to make four ounces. Of this mixture give one-half, and if it is vomited in an hour, give the other half; then, the doctor says, "apply a mustard plaster to the stomach, to prevent vomiting." It is quite evident from this that the stomachs of some of the doctor's patients have rebelled against this unpleasant mix-

ture, for he does not seem willing that his prescription for tapeworm should go out to the world without its being accompanied by a prescription for a mustard plaster. How efficient this mustard plaster is, in these cases, I am unable to say. But I ask you, gentlemen, Why should we be advised — why should medical students be directed to tantalize patients with such abhorrent doses when, as I shall prove to you, there is not the slightest necessity for it? If this is the best that an up-to-date clinical teacher, with all the devices of the modern pharmacist at his command, can give us in the treatment of tapeworm, then it occurs to me that, possibly, there is room for some observations concerning these cases even from an ordinary country practitioner.

And just here I have a confession to make. I have to confess that, some twenty years ago, I was guilty of harboring a tapeworm myself. My first efforts, made in the light of such information as I could get, to rid myself of this unpleasant tenant were not successful, but I finally settled on a method of procedure, and upon a remedy, which promptly produced the desired result. I have made use of the same means since, in quite a number of cases, and have been completely successful in every instance.

Now as to the method and the remedy. First, concerning the remedy. And allow me to assure you that I am not about to startle this society with the introduction of something new in therapeutics, for the remedy I made use of is Merck's preparation of male fern; and here is a point — Merck's preparation. This preparation differs materially, even in its physical characteristics, from any other preparation that I have ever examined. It is much more pungent, both in taste and smell, and of much thicker consistency; so viscid, in fact, as to make it advisable to warm the bottle slightly before attempting to drop it. I never think of using any other preparation. I have failed with others, but never with this.

Merck puts this up in one-ounce vials, and one bottle is sufficient for the destruction of several hundred feet of tapeworm.

Concerning the *dose* of this remedy, I give from forty or forty-five to sixty drops, according to the patient in hand.

If my patient was a delicately organized woman, weighing 100

pounds, forty or forty-five drops would be sufficient, but if a phlegmatic male, I should not hesitate to give sixty drops. These quantities I do not give at a single dose, but divide the portion into three doses. If giving forty-five drops, I should make three doses of fifteen drops each, and if giving sixty drops, three doses of twenty drops; and these doses I should give at intervals of two hours.

The form in which I administer the remedy is in capsules. I take an ordinary quinine capsule, of proper size, fill the long end, put on the cap, set them upright in a pill-box filled with some kind of powder, with directions to keep them right end up with care until swallowed.

Now as to the method of procedure: For instance, if a patient with tapeworm should present himself to-day (Wednesday), I should first of all assure him, with perfect confidence, that he could be relieved, and relieved permanently, in just about forty-eight hours. I should direct him to fast to-morrow on beef tea; that made from some of the extracts I should prefer. If patient must have something else, I should allow him some ordinary table tea and toast. To-morrow night I should give him two or three compound cathartic pills, aiming to get a tolerable movement of the bowels on Friday morning. I should give him, on Friday, fasting, a male fern capsule at 7 A. M., one at 9, and a third at 11, and an ounce of castor oil, reinforced, perhaps, with one drop of croton oil at 12 M., and I should expect the worm to pass before 4 P. M.

The only disagreeable part of this treatment might be said to be the castor oil. And this need not be so. I suppose that every member present has his own method of giving castor oil. My way is this: Warm the oil, add considerable sugar, and then add lemon juice till the mixture tastes of nothing else. In this way an agreeable mixture can be made. But if castor oil is thought to be objectionable, any other quick cathartic, as one or two Seidlitz powders, or a dose of rochelle salts, would probably answer the purpose.

It will be admitted, I think, that this method is sufficiently simple; that the remedy is given in a form both agreeable and tasteless is self-evident; *but* on the question of the efficacy of this plan of treatment, and also in regard to the truth of some rather

positive statements that I have made, I think you are entitled to some positive proof. This proof I will now endeavor to supply. To this end allow me to detail to you the treatment of a few cases that have come my way during the last few years.

The first case was that of a young woman about twenty years of age, of delicate organization, weighing about 100 pounds. She told me that she thought she had a tapeworm, although she was not sure. I thought it a little remarkable myself that so dainty a young lady should be carrying about with her so unpleasant a tenant; but as she was passing the diagnostic segments I prescribed for her. I directed her to fast for a day on beef tea; that night to take two compound cathartic pills; the next morning, fasting, a capsule containing fifteen drops of Merck's male fern at 7 A. M., and another at 9 A. M., and a third one at 11, and a dose of castor oil, with one drop of croton oil at 12. I advised her to stay in bed as much as possible while carrying out this programme, and afterwards, as I thought she would be a good deal prostrated by the action of the medicine, and by the excitement of being delivered of so abhorrent an object. I called in the afternoon, and instead of finding the patient in bed, she received me in the parlor, not only clothed and in her right mind, but in a very happy mental condition, as she had just passed thirty-three feet of tapeworm. She stated that the worm had been expelled before she got to the cathartic on the programme, but that she had taken it all the same, which was a very commendable thing for her to do, as I always direct my patients to take the cathartic at the designated time, even though the worm has apparently been all passed, for fear that some portion of the neck and head might remain behind and get a new hold. The cure in this case was complete.

Case II. Was a man in middle life, a sturdy blacksmith. He stated that he had a tapeworm; that the family physician, who is a well-known and successful practitioner, had prescribed for him twice; that only part of the worm had been expelled each time, and that segments had made their appearance for the third time. This man had learned, in some way, that I had had some success in this line, and wished me to prescribe for him. My bottle of Merck's male fern was now getting low, and fearing that the remainder might not be of sufficient strength, and seeing that

my reputation as a worm-killer was at stake, I sent for a fresh bottle, and then prepared him three capsules, of about twenty drops each; directed him to fast on beef tea for a day, to take three compound cathartic pills at night, capsule at 7 A. M., fasting; one at 9, and one at 11; an ounce of castor, with one drop of croton, oil at 12. Called in the evening. This man seemed to think that he had the object by the head this time, and he was evidently right, as it has not been heard from since. I asked this patient if the remedy had given him much inconvenience. He replied, not at all, and then volunteered the information that the prescriptions taken before, although not effective, had made him quite uncomfortable, this proving the peculiar merit of Merck's male fern.

Case III. Was that of a young girl aged 12 years, of decidedly delicate constitution. She had been prescribed for by the late Dr. John R. Cooper, without success. She had also taken pumpkin seeds through some friend's advice. In this case I had to vary my usual programme, for the reason that this girl was one of those children who are utterly unable to swallow a pill or capsule. Try as she would, she simply could not do it. After fasting the girl for a day on beef tea, with the cathartic at night, gave the following morning Merck's male fern, in a mixture, followed by a laxative at noon. The male-fern mixture was a pretty hard dose for this girl to swallow and retain, but she succeeded in doing so, and the worm died then and there, and was duly expelled entire.

Case IV. Was that of a married woman. When I called to see her I found that she was not only carrying a tapeworm, but also a child, at the eighth month of pregnancy. Concluding that the baby had the right of way in this case, I waited until one month after confinement, and then, after fasting the patient in the usual way for a day on beef tea, with two compound cathartic pills at night, I gave her the next morning three capsules, each containing fifteen drops of Merck's male fern, at two-hour intervals, with castor oil at 12. I called in the evening; patient complained that she had been pretty well saturated with the medicine; that she had both tasted and smelled it, and that she had been somewhat sick and faint, and with some pain. Probably she had not fully recovered her strength since her con-

finement. Possibly I had given her a few more drops than was necessary; but evidently no harm had been done, as she was up and about. There was no return of the segments in this case.

The fifth, and last case to which I shall refer, was one, to me, of perhaps greater interest than any of the others, owing to the tender years of the patient, and also to other circumstances. While making a professional call on this family, last September, the mother remarked to me that her boy of nine years had a tapeworm; that he had had it since he was about four years old; that previous to the time that she had discovered evidences of the worm, and for sometime afterward, the child had frequent attacks of fever, attended by convulsions. At this time she called in a practitioner of the neighborhood where she at that time lived, a physician of excellent reputation. Under his ministrations the fevers and convulsions ceased, but the worm held out against such attacks as were made upon it. Among other remedies, the lady stated that male fern was given. Later on, when the child was six or seven years of age, another physician, this one a homœopathist, was called on to try conclusions with this tape worm. After giving several prescriptions, which were unsuccessful, he called upon a homœopathic friend in Poughkeepsie for consultation and advice.

Th prescription of the latter gentleman, as stated by the mother, was chloroform, glycerine and croton oil. Of course this was homœopathic, but for all that, it proved such a nauseous dose for the boy that most of it was rejected. The mother stated that at about this time our homœopathic friend had nearly killed a patient, an adult in the country, with this prescription, and that he declined to experiment further with this child, wherein I think the doctor showed his discretion. At this time the mother concluded to give the boy a rest, and the tapeworm had now remained undisturbed for some two years, and I am not quite sure that the mother asked me to prescribe for her son at this time; but I remarked to her that if the patient could swallow capsules, I thought I could do something for him. The mother, evidently thinking that another attack would be a serious thing, deferred the matter till a more convenient season. After several weeks Mrs. L. came to me for the remedy. I prepared for her three capsules, with about seven drops in each one, and also gave her two compound cathartic pills, directing her to fast the child

on beef tea for a day, and give one of the cathartic pills at night, and then a capsule at 7, 9 and 11 A. M. and the other cathartic pill at 12, and to keep the child in bed for that day. Some time afterwards the mother reported to me that she had been able to carry out the programme successfully; that the action of the medicine did not seem to give more disturbance than an ordinary cathartic; that the only trouble had been in fasting the boy on beef tea, as he did not prove to be fond of that beverage; that, in fact, it had sickened him, and that she had been obliged to give him some milk. Fearing that the pills were not going to act promptly, she gave him about 1 P. M. a cathartic pill that she had in the house. The worm passed between 3 and 4 P. M., and the mother remarked that a slim, delicate part of the worm had passed that she had never seen before. There have been no segments since, and I think it is safe to conclude that this worm died last October, the cause of death being a poisonous dose of male fern.

I think we are also justified in the conclusion that, unless this boy had been able to take capsules, he would have been compelled to have borne all the inconvenience of a tapeworm until increasing years had brought sufficient strength of mind and of stomach to have enabled him to retain the nauseous doses usually given in these cases. In this view of the case this device of using capsules was of some value to this boy, as well as to his mother, a value hard to estimate in dollars and cents. I am well aware that I had some advantage in this case over the other practitioners who had prescribed for him, on account of the child's increased age, and especially over the one who prescribed first, when the boy was only four or five years old. It is not probable that the patient could have then swallowed capsules; whether he could have retained four or five drop doses of Merck's male fern I am unable to say; but at the age of 6 or 7, when our homœopathic friends prescribed, he could undoubtedly have taken capsules and been promptly cured, provided the capsules had been properly loaded.

This device of giving male fern in capsules is, of course, not original with me, but I do not think it has been very generally made use of, the reason probably being that inferior preparations of male fern have been used, and consequently the quantity

required was so large that it has been inconvenient to put it in capsules.

I do not think I am riding a hobby on this business, for if any member can give a better method or remedy I will certainly make use of them in my next case. But I have found that cases of tapeworm, treated even in the manner described, constitute a class of cases, the treatment of which is exceedingly satisfactory. In many cases in our daily practice we are never sure of just what we accomplish; we make our prescription, and nature does the rest; in fact, in many cases nature does it all, or will if we give her a fair chance.

But in these cases of tænia we get direct, visible, tangible results. These cases are satisfactory, also, in the good will and gratitude we receive from our patients, for services rendered in the eviction of their unprofitable tenants, especially when it is done in a manner so agreeable to all concerned, except to the tapeworm itself.

Referring to the tapeworm that took up his abode with me so long ago, I can say that it caused me a good deal of inconvenience, but I have often thought that the life of that tænia was not spent in vain, for by means of it I gained some knowledge of an efficient method by which to dislodge these troublesome entozœ from their intestinal strongholds, and since that time I have been able to take sweet revenge on a goodly number of the species.

NOTES TAKEN FROM THE CLINICAL LECTURES OF DR. JAMES GREGORY, OF EDINBURGH, IN 1787.*

Isabella Monro, aet. 25, Married.

Has been ill for some time — complains of Orthopnœa, Load & Oppression about the Præcordia. P. 116 & feeble. Skin hot & dry. Face turgid & livid. Tongue foul. Thirst. Belly bound. Ischmia. Menses irregular for some months. Little or no sleep, & nocturnal sweats. Legs œdematous. Subject to dyspeptic & hypochondriac Complaints. The relapse of her disorder attributed to Cold. The last attack began with hæmoptysis. Has been subject to an asthmatic Complaint for some time.

* Edited, with Introductory Note, by Dr. G. ALDER BLUMER, Utica State Hospital. Continued from the ANNALS of July, 1897.

Her present Complaint is either Dyspnœa or Hydrothorax. The Dr. supposes that Water in the legs does sometimes give rise to Hydrothorax. The Symptoms of both these Diseases, according to Dr. Cullen's Definitions, seem pretty well marked, tho' there is not sensibly, the "Aqua in Pectore fluctuans." This cannot be always ascertained, nor is often very safe to attempt it.

The Hydrothorax is not very often cured, tho' this will in a great measure depend upon its cause. Dr. G. supposes that by the operation of certain medicines, increased absorption may take place & carry off the whole of the water.

Great debility & great tenuity of the fluids sometimes bring on dropsy. The Dr. supposes there may be a collection of water in either or all the three Cavities of the thorax.

A *Blister* was ordered for the breast, which is a good remedy in either case. Blisters are frequently powerful by promoting absorption or discharge.

An *anodyne* once in the course of 24 hours has often very good effects as expectorants.

The *Pil: Sulit* Dose gr.x was ordered twice a day. It was not given as an expectorant, but as a diuretic. It is best given combined with mercury. Dr. G. has found this Combination the most powerfull of all the diuretics he has ever made use of. By it he has known the quantity of urine increased from lb.iss. or lb.ii in the 24 hours to lb.viii, at the time that a Diarrhœa was going on.

This Patient died, but the Body was not allowed to be opened.

It is the venous Blood which gives the livid Appearance so remarkable in this Case.

Sometimes when the Swelling of the Legs disappears the difficulty of breathing may be increased & vice versa. The Water thus leaving the Legs is sometimes translated to the Chest. — The Dr. suspected Hydrothorax in this patient when he first saw her, & accordingly shook her Body. This induced Syncope, & her pulse intermitted for several Seconds. He tells us this that we may be aware of the Danger that sometimes attends this Experiment. He fancies he should have gained little of our Estimation if in his first attempt to examine his patient, he should have killed her. This has sometimes happened; & once in a patient the Dr. had about ten years ago, to his Clerk in the

Clinical Ward: When endeavoring to discover a fluctuation of water in the Case of a Woman — she fell dead from his Arms.

In one Case of hydrothorax the Dr. found the Pulse at 32, & some of the gentlemen who attended to it in his absence informed him it was as low as 28 in a Minute.

THE DESIRABILITY OF A PERISCOPIC QUALITY IN CORRECTING LENSES.*

BY C. M. CULVER, A. M., M. D.,
Albany, N. Y.

To some extent such a desirability seems generally conceded, but the extent does not appear to be great enough. The point that it is specially desired to make now is that such a quality can and ought to be often obtained. Simple spheric lenses are nowadays mostly menisci, and are mounted with the concave surface toward the eye. In cases of compound astigmatism, however, the prescriber is apt to combine the spheric lens that corrects the ametropia of the least ametropic meridian with the cylindric lens that corrects the astigmatism, of itself, making the latter concave when the eye is myopic in all meridians, and convex when the eye is hyperopic in all meridians. In the case of an eye that is hyperopic by 1.00 D. in its vertical meridian, and by 2.00 D. in its horizontal meridian, the usual prescription would be:

Sph.+1.00 ⊃ Cyl.+1.00, axis vertical.†

A better form of lens, having the same optical power, but being at the same time periscopic, has the formula:

Sph.+2.00 ⊃ Cyl. − 1.00, axis horizontal.

In case the eye is myopic by 1.00 D. in its horizontal meridian, and by 2.00 D. in its vertical meridian, the usual formula is:

Sph.−1.00 ⊃ Cyl.−1.00, axis horizontal.

A better one reads:

Sph.−2.00 ⊃ Cyl.+1.00, axis vertical.

The foregoing are but type cases, and the application of the principle involved may be made to manifold combinations of

* Read before the American Ophthalmological Society, May 27, 1897.

† There exists a strong temptation to reöpen, here, the discussion of the question of the best method of indicating the inclinations of axes of cylindric lenses. However that method which is most used may be made to help the prescriber by suggesting the numeration of quadrants; the one that is used by Snellen, Landolt, Knapp, Standish and myself seems to me superior to the other, in the respect, among others, to which allusion has just been made.

hyperopia, myopia and emmetropia. In cases of simple astigmatism it is better to prescribe a compound, periscopic lens than one having only a plano-cylindric combination. Instead of:

Cyl. + 1.00, axis vertical,

it is better to write:

Sph. + 1.00 ⌒ Cyl. — 1.00, axis horizontal.

Instead of:

Cyl. — 1.00, axis horizontal,

it is better to write:

Sph. — 1.00 ⌒ Cyl. + 1.00, axis vertical.

While the formula for a correcting lens, prescribed according to what is here recommended, does not show at first glance the character of the ametropia present, it requires but a moment's thought to determine whether the concave or convex element is preponderant.

36 EAGLE STREET.

Clinical and Pathological Notes.

A Case of Traumatic Tetanus Treated with Antitoxin and Physostigma.— Recovery. — H. G., male, aet. 9, a resident of Albany. While walking barefoot upon the floor of a piazza, he ran a sliver into the ball of his foot. His father extracted it with partial success. The wound festered, and the boy becoming slightly lame, was kept in the house. Ten days after the injury he began to complain of stiffness of the neck and jaw, and was uneasy. His parents, thinking his foot better, and that he had only taken cold, allowed him, at his request, to return to school. There his teacher at once noticed that he looked ill and anxious, and had involuntary twitchings. Four days later (June 10th, 1897) I was summoned, and found his condition as follows: The jaws firmly locked, the muscular system in a state of rigid contraction and the abdomen extremely hard and tense. At intervals sharp pains would shoot from the sore foot into the back and abdomen. The temporal and masseter muscles were the seat of great distress. During the paroxysms, which recurred every fifteen minutes, the body was in a state of opisthotonos. The countenance was distorted and there was well-marked "risus sardonicus." Between the attacks the intellect was clear, and on the approach of one the child would call pitifully to his mother to help him bear it. The skin was dry; temperature not greatly augmented;

pulse wiry and rapid; both kidneys and bowels inactive. I was told that he had eaten nothing for two days. I gave a bromide and chloral enema; then laid open and curetted the wound; injected into it one drachm carbolic acid, and directed poultices to be applied. Through the shut teeth and an orifice due to a broken tooth, liquid food and stimulants were administered. Inhalations of chloroform broke the violence of the paroxysms and at times held them almost completely in abeyance. I enjoined quiet and removal to a dark room.

June 11th. — No improvement. Paroxysms more severe and not controlled, as heretofore, by chloroform. I injected fifteen c.c. Tetanus antitoxin into the abdominal wall and administered one-half ounce of whiskey.

June 12th. — Found jaws a little relaxed, and repeated the antitoxin dose.

June 13th. — Jaws considerably relaxed and spasms lessened in force, duration and frequency. Injected one-half drachm of carbolic acid into wound and twenty c.c. antitoxin into the thigh.

June 14th. — Jaws again completely closed, spasms recurring every quarter hour, and all the tetanic symptoms increased. Pulse feeble; respiration labored. I now ordered two drops of the fluid extract of physostigma every two hours and one drop to be added to each dose so long as there was no contraction of pupils or other contra indication. In eight hours the patient was taking five drops; the jaws were separate and movable; there was less rigidity, and the spasms were lighter and less frequent. That night he had several hours of refreshing sleep, and in the morning was tranquil. The physostigma was continued and the dose gradually increased to fourteen drops.

June 16th. — The muscles of the neck were relaxed; pain had in great part subsided; bowels and kidneys had acted normally. There had been but two paroxysms in eighteen hours, but muscles of abdomen still rigid. Patient could move his head easily, talk and eat.

From this time where was daily improvement. Nourishment had been given, consisting of whiskey, milk or beef tea, at intervals of one or two hours; but as the little fellow now wished for eggs only, and as they seemed to agree with him, his fancy was indulged. He could dispose of twelve raw eggs per day without

inconvenience. I claim no originality in the treatment of this case. Among the many remedies that have been resorted to for the cure of tetanus, not one has as yet established a claim to be called a specific. Those I employed had all been used before, with and without good effect. The malady runs a definite course, and it is important that the powers of the system be kept up, and that those in charge be possessed of tact, judgment and persistence. My combination may or may not have been the best, but since tetanus is a disease so rare, so terrible and so generally fatal, the recovery of a case is a matter of interest to the profession.

JAMES M. MOORE.

Editorials.

The German Medical Congress.

The fifteenth German Congress for Internal Medicine was held in Berlin from June 9th to June 12th. Many scientific but most practical medical subjects were considered. There were three sessions daily. The morning sessions from nine to twelve were devoted to themes assigned the previous year to such prominent clinicians as Baumler, Unverricht and Eulenburg. The themes were "Chronic Articular Rheumatism and Its Treatment," "Epilepsy" and "Basedow's Disease." The afternoon sessions were filled with the reading of medical papers and demonstrations. The evenings were given to the consideration of the business affairs of the congress and to the banquet. This arrangement seems to permit most admirably the complete consideration of important topics of general interest, while it allows sufficient time for individual papers.

Insanity and Tuberculosis Among the Negroes.

Dr. Mays, of Philadelphia, read before the section of neurology of the American Medical Association a suggestive paper on "Increase of Insanity and Consumption Among the Negro Population of the South Since the War." Insanity and consumption have, according to his statements, almost doubled. The conclusion is drawn that this frightful increase is the inevitable result of an inferior race struggling with a superior civilization, a condition which also exists among the aborigines of North America and Australia.

The Pittsburg Medical Review.

At the last meeting of the Medical Society of Pennsylvania, the *Pittsburg Medical Review* was chosen the official organ of that society, and in consonance with this act, its name was changed to the *Pennsylvania Medical Journal.* This journal, which has always maintained a dignified attitude upon all professional subjects, and which has sought to attain a high scientific plane in its pages, will, by this change, have its influence extended and its high character more widely appreciated.

Scientific Review.

The Roentgen Rays in Medical and Surgical Diagnosis. — Since the announcement of Prof. Roentgen's wonderful discovery of the X-rays, there has been an enormous mass of literature upon the subject from all parts of the civilized world. Judging by this, one might be led to suppose that the actual advance in the science of skiagraphy was greater than it really is. Every observer has not been able to make a valuable discovery, and much that has been written is mere repetition of what has gone before.

The aggregate result is certainly gratifying, however, not only on account of what has been done, but also for what may and probably will be done in the future. As to the apparatus used in producing the X-rays, there have been many changes and improvements, both in the form of the tubes and the machines used to excite them. It would be of little use to go into the details of these various changes in a paper of this kind, so it may be summed up by saying that the whole question of apparatus is still *sub judice*, and there will undoubtedly be many more changes before perfection is reached.

The best apparatus to-day has splendid penetrating power, so strong that if an exposure be made too long even the bones disappear, and no picture at all is obtained, since the whole surface exposed is illuminated by the rays. On the other hand, the great defect seems to be lack of definition or sharpness of outline. This defect is undoubtedly due to faulty construction of the tubes, and is being rapidly done away with as the makers become more skilful.

As to the danger from the use of the rays, and their liability to cause inflammation of the skin and falling out of the hair and nails, it may be said that this danger exists. On the other hand, such accidents need never occur if proper care be taken. The worst case of dermatitis reported was the result of two exposures to the rays, one of forty minutes, with the tube five inches from the skin, the other of ninety minutes, with the tube only about three inches away. Another serious case occurred in London, in which the tube was placed six inches from the abdomen of a delicate boy. "A powerful stream of X-rays was projected against the skin for an hour. The result of this experiment was a terrible dermatitis, which took a long time to heal."

Experiments of this kind were made when the art of photographing with the rays was not at all understood, and when very long exposures were thought to be necessary. With modern methods, photographing hardly ever requires more than ten minutes, and accidents such as those stated above are certainly things of the past. They need never occur with proper use of the rays.

Surgery. — In the domain of surgery, it is hardly possible to overestimate its enormous value in diagnosis. In the location of foreign bodies alone it has been of incalculable assistance. Objects of all kinds, from pins and needles to false teeth, have been located in every conceivable part of the human body, and their removal greatly facilitated. Moreover, grave errors have been avoided by their use. In the case of foreign bodies swallowed, it is often impossible to tell just where they are located, and under a mistaken idea the œsophagus might be opened to find a body which had already reached the stomach, or the opposite mistake made of opening the stomach to reach a body which was firmly wedged in the œsophagus. The use of the X-rays not only avoids both these mistakes, but in a case where a foreign body is slowly working its way along the intestinal tract, the demonstration of this fact may avoid the necessity of any operation at all. When a foreign body is lodged in the œsophagus, it is often impossible to grasp it with any of the numerous instruments made for the purpose, although its shadow may be distinctly seen by means of the fluoroscope.

Dr. Delatour, of Brooklyn, has overcome this difficulty in a very clever manner. A four-year-old child had swallowed

a small iron washer, which had lodged about midway in the œsophagus, where it could be plainly seen by means of the rays. All efforts to grasp the object were fruitless, however, as long as the sense of touch alone was relied upon. The doctor then fixed the position of the object by means of the fluoroscope, and with his other hand introduced his forceps through the mouth. As he pushed them down he was able to watch their descent and note the moment when they reached the object. He then closed them upon it and was able to remove it without further difficulty.

Dr. Herrick, of Troy, had a patient in whose foot a needle had become buried. Although he could see it plainly by means of the rays, he was not able to reach it even after making quite a large incision. He then resorted to the same device as the Brooklyn doctor, and fixed the needle with the fluoroscope. He was thus able to see just where to cut, which he did, holding his knife in the other hand; and having his eyes to aid him, he soon found the needle and extracted it.

A somewhat interesting case, where the X-ray prevented a mistake, occurred in the writer's own experience. A man received a bullet in the hand, and as the member was very large and muscular, it was impossible to locate it. The patient declared positively that he could feel the bullet at a certain spot in the hand, and so sure was he that the surgeon was almost induced to make his incision at this point. A single glance at the hand with the fluoroscope revealed the fact that the bullet was buried at a point quite a little distance from its supposed location by the patient. It was a small, 22-calibre bullet and so located between the bones that it could not be felt by external palpation. Had the surgeon attempted to find the bullet without the aid of the rays, he might have dissected a good part of the hand before he succeeded. It should be said that the wound of entrance had closed, so that the probe could give no assistance.

Another field where the rays have been of great assistance is that of fractures. Indeed, it may almost be claimed that the pathology of fractures will have to be rewritten on account of the immense amount of new data which the rays are constantly giving. Take, for example, Colles' fracture of the wrist. Before Roentgen's discovery, it was supposed that it was rare to have the styloid process of the ulna broken off along with the fracture

of the radius. We now know that the fracture of this little process is a very common complication of the main injury. The rays also enable us to distinguish between a true Colles' fracture and a fracture through the epiphyses of the bones in children, which may simulate it very closely in external appearance.

The rays also allow us to determine just what kind of a fracture we have to deal with at the time of its occurrence, whether it is a transverse fracture, a split fracture in which the line of the break is more or less diagonal, or, more curious and interesting of all, a spiral fracture. When a fracture is examined by the rays, a line of light is seen crossing the dark shadow of the bone, and in this last form the line is seen to be a distinct spiral. This was formally supposed to be an excessively rare form of fracture, but the probabilities are that many cases occurred which were never recognized, and that increased use of the rays in fractures will show that this form is more common than was formally supposed.

The rays have also been of great assistance in determining whether a given injury has caused a fracture, a dislocation, or a simple bruise. In a recent injury to a joint, where there is great swelling, it is often impossible to tell the condition of the bones buried far beneath the fluctuating effusion, and serious errors in diagnosis sometimes result. The swelling offers little or no resistance to the rays, however, so that by their aid a diagnosis can be easily and certainly made in the very beginning. The usefulness of the rays is not by any means ended when the diagnosis is made. By this aid the surgeon can watch the progress of the case and the size and formation of the callus; he can assure himself at any time that the splints are holding the bones in proper position, and this without in the least disturbing the dressings. Last, but not least, after the treatment is completed, it enables the surgeon to tell with certainty if the result is satisfactory and the bones well united.

In the case of joint troubles of all kinds the rays play an important part as an aid to diagnosis and pathology. Indeed, there is one condition which was practically not recognized before they came into use. A complete dislocation of a bone is, as a rule, a very evident condition, and can generally be recognized by external means. A sub-luxation, so called, where the bone is not pulled entirely out of its socket, but rests on its edge,

is often very difficult to recognize, although it may cause severe pain by stretching the nerves. There is still another condition, however, which can only be discovered by means of the rays, and it is possible that this last may, when it is better understood, account for certain symptoms which have hitherto seemed inexplicable. A patient may fall and slightly bruise the shoulder joint. A careful examination may convince the surgeon that there is no break, dislocation or sub-luxation. Nevertheless the joint and arm become the seat of excruciating pains, which may last for months and resist every possible means of treatment. This condition is looked upon as an inflammation of the nerves, and it is probably correct, but it seems somewhat strange that so slight an injury should cause such serious results. If this shoulder joint be examined by means of the rays, it will be seen that there is a thin line of light between the head of the humerus and the mass of the shoulder, showing that the bone does not fit snug in its socket. If the opposite normal shoulder joint be examined, there will be no such light line visible. In other words, in a normal joint the bones are held in close apposition by the muscles and ligaments. This peculiar condition is not as yet definitely understood, but there is probably a relaxation of the ligaments of the joint, which throws undue strain on some parts of the brachial plexus and thus gives rise to the pain. These obscure joint troubles offer a fruitful field for investigation, and it is to be hoped that with the aid of the rays some new light may be thrown upon their pathology.

Every one is familiar with the terrible deformities which gouty deposits cause when they occur in the neighborhood of joints. They are often seen in the hand as large excresences just under the skin, and when numerous the appearance of the hand is so changed that it hardly seems like a human member. When a hand of this kind is examined by the rays, the following very interesting fact is brought out. These deposits, though situated close to the joints, are not in them, nor do they touch them, but are confined to the fibrous tissue which surrounds the joint. This fact marks a very important distinction between gout and arthritis deformans, for in the latter affection there is actual distortion of the joint surfaces themselves.

At the University of Pavia, in Italy, the entire tibia was removed from a boy's leg, and it was found that by the use of the

rays the growth of the new bone could be beautifully studied. It was used to illustrate to the students the lectures on the formation of bone, and was found to be a most valuable adjunct to the teaching.

Still another use for the rays has been found in the preparation of anatomical specimens. By injecting certain solutions containing salts into the vessels, and then taking a skiagraph of the part, the vessels showed as dark lines, which could be followed to their minutest ramifications. Two solutions were used, one for the arteries and the other for the veins. These solutions were not equally opaque to the rays, so that the shadow of one was darker than that of the other. In this way the veins and arteries could be distinguished from each other, and the method forms a valuable aid in anatomical study.

Medicine. — Turning now to medicine, we find that the practical results from the use of the rays are much less than those obtained in surgery. We cannot tell what the future will bring forth, however, and Prof. Bouchard, of Paris, thinks they will in the future be equally valuable in both these great branches. As to the chest cavity, filled as it is with the light, spongy tissue of the lungs, it allows the rays to traverse it with great readiness, so that a clear field is obtained, barred by transverse shadows representing the ribs. The black mass in the center formed by the heart and spinal column is also to be made out, but as a rule its borders are somewhat ill-defined. It is this lack of definition already referred to which forms the greatest obstacle to investigation, when it is necessary to send the rays through a large mass of tissue, as the trunk. In spite of this difficulty, many things have been made out. The mass of the heart has been made out quite clearly, and it has been further seen to change its form at each contraction. The shadow of the diaphragm has been seen to rise and fall with each inspiration. The action of the diaphragm was once being studied, when a peculiar thing happened. The patient was seized with an attack of asthma while the examination was going on, and it was seen that one-half the diaphragm continued to move as usual, while the other half became stationary, and remained so as long as the attack lasted. As soon as it passed off, however, both sides moved as before. This fortunate accident showed plainly that the attack of asthma was due to unilateral spasm of the diaphragm.

The study of heart disease has certainly been greatly aided by the rays, and an observer skilled in their use can map out this organ with considerable accuracy. It has even been claimed that an aneurism of the aorta can be located by means of the rays. Another enthusiast avers that he can discover and locate tubercular foci in the lungs even when too small to be found by ordinary methods. With regard to these two statements, the author would simply say that with all possible care he has never been able to obtain any such results with the rays, and that he is strongly inclined to disbelieve them.

The rays have also been used in the study of pleuritic effusions with a good deal of success. The fluid mass is much more opaque to the rays than the spongy tissue of lungs above it, so that a sharp black line is obtained, which marks the upper surface of the effusion. The position of this line may be seen at a glance, and if there is any change from day to day, it can be readily noted. If the line rises in the chest, it shows that the effusion is increasing. If it goes down each day, it indicates that the effusion is being absorbed and the patient recovering.

The mass of the liver can be made out, and a fairly sharp line can be seen which marks its upper border. Below, however, it merges into the general abdominal mass, so that it is very difficult to obtain any correct idea of its size. If the stomach be dilated with gas, it shows as a spot of light against a dark background.

Some very interesting experiments have been conducted by two Harvard medical students. They found that by mixing food with sub-nitrate of bismuth, which is opaque to the rays, it could be followed in its course down the œsophagus and into the stomach. The peristaltic action could be plainly seen as it slowly carried the bolus of food along, the action becoming slower as it approached the stomach. Large boluses stopped at the lower half of the thorax with each expiration, and descended with each inspiration. The examination of a cat's stomach filled with food mixed with sub-nitrate of bismuth showed the occurrence of a constriction at about the middle of the organ, which slowly moved toward the pylorus and was followed by other peristaltic waves at intervals of about ten seconds. The food thus pressed onward toward the pylorus did not pass into the duodenum, but returned apparently through the central por-

tion of the organ, since the wave of constriction was never sufficient to obliterate the whole cavity.

As far as the writer knows, no one has ever obtained a satisfactory picture of the kidneys. Certain observers have claimed to obtain a view of the fœtus in utero, but this is as yet doubtful, to say the least.

From this short summary of the matter, the following conclusions may be drawn: First, that the rays have already proved of great scientific value both in medicine and surgery; second, that we have not by any means seen the end of their usefulness, but that more perfect apparatus and greater skill will enable us to look still further into nature's secrets, and bring out new discoveries quite as wonderful as those already made.

WALTER F. ROBINSON.

Obituary.

BENJAMIN F. SHERMAN, M. D.

Dr. Sherman died at his home in Ogdensburg, N. Y., Sunday morning, May 30th, 1897. His illness dated from the first week in February, when he contracted a severe cold while in attendance upon the meeting of the State Medical Society. He recovered in a measure, but there was a noticeable impairment of vigor, and the end gradually came.

Dr. Sherman was a native of Vermont, born at Barre, May 24th, 1817, and was therefore 80 years of age. He was the youngest of five brothers, all practicing physicians. The family trace their genealogy to John Sherman, who came to Connecticut in 1634, and in Old England the record is perfect to Henry Sherman, who was born in Devon in 1516. Roger Sherman, one of the committee of five to draft the Declaration of Independence, was a cousin of Dr Sherman's grandfather.

Dr. Sherman was educated in the Ogdensburg Academy, taught in the schools of the village, received his medical education at Pittsfield, Mass., and at the Albany Medical College, where he graduated in 1841. He began the practice of medicine at Hammond, where he resided two years. Thence he removed to Potsdam, where he remained about the same length of time, and then went to Ogdensburg, in 1845. This has since been his home. In 1847 he married Miss Charlotte C. Chipman, of

Waddington, to whom five children were born, three of whom survive.

Dr. Sherman was one of the most widely known physicians of the State. He took the deepest interest in public affairs, and was honored in many ways by his fellow-citizens. He was a staunch supporter of the State Medical Society, and had held the positions of president and vice-president. He had also been president of the Northern New York Medical Society, and of the St. Lawrence County Medical Society, and was for nearly thirty years president of the Ogdensburg Medical Association. The last meeting he attended was that of the County Society, at Gouverneur, May 18th.

He was a recruiting surgeon during the war, and was for many years president of the Board of Pension Examiners. He was frequently called upon to give expert testimony as physician and chemist in the most important trials and litigations, and in this capacity has given evidence in many courts throughout the State.

The recital of the offices of trust and honor held by Dr. Sherman gives only an imperfect idea of his life. He belonged to the class of men whose individuality rises above such distinctions, and his character and traits will survive in the memories of those who knew him long after the recollection of the honors conferred upon him has passed away. He began practice when a medical education was difficult to obtain. He took long journeys through a rough country, when railroads were almost unknown, by stage or by canal packet, to reach the recognized leaders in medicine, and to profit by their instruction. Without other help than he earned by teaching school, he sought the best obtainable preparation at a time when the simplest exactions were required by the law, and when the community was glad to accept as physician any one of courage to assume its severe duties and responsibilities. Occasionally, in reminiscence, he spoke of the experiences of those early days. Starting on horseback, in the morning, perhaps at sunrise, with saddle-bags containing drugs manufactured by himself from native plants, and a few instruments, he made his long tour, not knowing what emergency or calamity might test his skill or his judgment before his return at night. He might be called upon for an operation in major surgery or the delicate manipulation of the eye. In epidemics of

cholera and small-pox of magnitude now almost unknown, he was abroad night and day, not the least of his duty being the removal of some deserted victim from the roadside to a suitable place, frequently his office couch.

Under such circumstances and conditions he developed a strict sense of obligation and self-confidence, which led to positiveness of expression and opinion. This element of his personality carried the conviction of honest intention, and the absence of ulterior motive, in which lay the strength of his character. It is not a little remarkable that he should have developed no prejudices. He began study and practice when medicine was in an entirely crude and empirical state, and he died at the dawn of an era in which medicine is to become one of the greatest triumphs of human accomplishment. He saw the birth of the specialties and the refinements and exactness accompanying their progress to the dignity of separate sciences. He passed from the era when open wounds were packed in sawdust or dirt, and the majority of compound fractures terminated fatally, to that of modern surgery. With every advance he kept pace, so that, in his eightieth year, his younger colleagues came to him for advice, and borrowed his instruments and his books.

He needed not the reputation of membership in medical societies for advancement, but he attended more regularly than any physician in his part of the State. In 1884, at the most critical period in its history, the State Medical Society chose him president. He allowed none of the bitterness of that serious dispute to find its way into his heart, but manfully relinquished friendships which had been very dear to him, because he saw no way except that which seemed to him right. His greatest faith was in the Ogdensburg Medical Association, and on only one or two occasions in thirty years did he miss the bi-monthly meeting. When the St. Lawrence State Hospital was opened at Ogdensburg, he saw the advantage to the hospital and association of co-operation, and received the physicians of the former to membership in the latter, thus giving a strong impetus to the medical work which has since made the new institution famous. And when, in the flush of prosperity, there was danger that the convivial feature should become prominent, he was quick to resist its encroachments upon the scientific work of the organization. The propriety of his re-election to the presidency of the

association was never questioned; that the association might not survive him was often feared.

Such were some of the elements in his personality which led the association, in 1893, to pay him in a public dinner the highest compliment in its power, which endeared him to his family and his friends, and inspired the citizens of Ogdensburg, in public meeting to take action upon his death, "to commend his career to the youth of the city as an example of those sterling qualities which raised him ever upward in the esteem of his fellow-men."

DR. WILLIAM C. WEY

died at his home, in Elmira, N. Y., Wednesday, June 30th, 1897.

Book Reviews.

Surgery of the Rectum and Pelvis. By CHARLES B. KELSEY, Professor of Surgery at the New York Post-Graduate School. 573 pages. Richard Kettles & Co., New York, publishers.

Rectal surgery, like the other departments of medicine, has made much progress within the past few years, and this has led to the production of a number of books upon this subject, some good and others less so, but none discuss and treat this class of affections from a thoroughly modern standpoint and with a full appreciation of our most recent knowledge of their pathology and treatment.

All those who are acquainted with Dr. Kelsey's former works upon diseases of the rectum will immediately recognize the increased scope of the present work. The book not only deals with rectal, but also with certain departments of pelvic surgery, and in his preface the author states that "the impossibility of separating diseases of the rectum in practice from gynæcology and genito-urinary diseases is apparent in such cases as laceration of the sphincters, proctocele, recto-vaginal fistula, etc., all of which diseases are constantly associated with rectal symptoms." We thoroughly concur with this opinion, but certainly fail to see the advantage of considering ureteral and other disorders in a book on rectal diseases. This book is primarily one of operative surgery. It is essentially practical, and the writer has availed himself of the results of recent investigation and experimentation, which have either thrown light on their pathology or led to improvement in their treatment. There is nothing spectacular or sensational about either its contents or its illustrations, but it is a clear, able, practical and absolutely impartial presentation and discussion of the latest facts and theories in the field which its title covers.

We regret that space forbids a criticism of the various subjects in

detail. The work opens with an excellent, clearly and simply written article upon the anatomy of the rectum. The chapters on rules regarding examination and diagnosis and the preparation of the patient are most helpful and suggestive. The remainder of the book is devoted to the consideration of special diseases and operative measures practiced for their cure. We especially commend the terse and able manner in which the author has treated the subject of strictures of the rectum. In cases of non-malignant stricture, where intestinal anastamosis around the stricture is indicated, Dr. Kelsey thinks Bacon's method deserves further trial. Kraske's operation receives the space which its importance commands. Intestinal anastamosis is fairly well treated, but we are surprised to find no mention of Halstead's mattress sutures when speaking of the different methods used in the closure of the gut. This method, in our opinion, is decidedly better than some mentioned, if not the very best.

Take it altogether, it is a decided improvement upon any other American text-book upon this subject, and for concise thoroughness, one of the best in the language, and of special value to the busy practitioner, as well as to the specialist. AUGUST JEROME LARTIGAU.

Atlas of Clinical Medicine. By BYROM BRAMWELL, M. D., F. R. C. P., Edin., F. R. S., Edin., Assistant Physician to the Edinburgh Royal Infirmary, Etc., Etc. Volume III. Part 3. Edinburgh. Printed by T. and A. Constable, at the University Press. 1897.

This fasciculus completes the last volume of Dr. Bramwell's Atlas. It contains papers upon pseudo-hypertrophic paralysis and progressive muscular atrophy, cyanosis and congenital heart disease, calcareous degeneration of the heart, chlorosis, pernicious anæmia and alopecia areata. These are illustrated by fifteen plates, several of them chromolithographs, and all of them, as well as the text, executed in the greatest perfection of the printer's and engraver's art.

The other parts of this volume contain descriptions of congenital syphilis, progressive muscular atrophy, the progressive muscular dystrophies, the thyroid treatment of skin diseases, poliomyelitis anterior acuta and cancer, the plates showing, in addition, psoriasis, lupus, ichthyosis, mitral disease, congenital syphilis, melancholia and dementia.

Dr. Bramwall's scheme has comprehended the most elaborate medical work we have seen. He has adapted to the service of clinical medicine a style of publication hitherto almost entirely limited to anatomy, dermatology and a few special departments. The text has been carefully prepared, and treats each subject exhaustively, and with due attention to the results of the most recent investigations. The present work is a fitting addition to the admirable medical publications sent out during the last decade from the Athens of the North, and sustains the high scientific reputation of that city.

The price of the Atlas is about $7.50 per volume, and it is to be hoped that at this low rate the demand may be sufficient to justify the editor and publishers in the production of another series.

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For the ANNALS.

THE PURPOSE AND NECESSITY OF MEDICAL LAWS, WITH A BRIEF HISTORY OF THE SO-CALLED OPTOMETRY BILL.

BY FRANK VAN FLEET, M. D.,

Chairman Committee on Legislation of the Medical Society of the County of New York.

Every organized body of men, in endeavoring to carry out the purposes of its organization, realizes, early in its existence, the necessity of having a committee on legislation, and, in accordance with the motives actuating such organization, do the efforts of this committee meet with success or failure. Legislatures are made up, in most cases, of able and conscientious men, who desire to do their duty to the best of their abilities. That there are exceptions to this there can be no doubt; and every one who has had to do with legislatures has soon learned to pick out the men who are honest and eager to do the right, as well as those who can be counted on, for some reason or other, as likely to be on the other side.

Legislatures are organized for the purpose of enacting laws for the benefit of the community; and when measures are introduced in these bodies, and advocated and opposed by individuals of apparently equal honesty and respectability, it is often difficult, if not impossible, for legislators, not otherwise influenced, to decide which is right. In such cases it would seem to be the proper course to disregard entirely the claims of opposing factions, and consider only how the proposed legislation is likely to affect the public at large. So it would seem that special legislation should never be allowed, except that it becomes necessary for the proper protection of the people. Of course, legislation

enacted for this purpose, *i. e.*, the protection of the community, must, incidentally, benefit some one individual, or class, perhaps to the disadvantage of another; but it should only be incidentally; and when legislation is desired for the sole purpose of benefiting and protecting one set of individuals, when such protection must, in the end, work harm to the community, it should be persistently frowned upon by all honest men and good citizens, whether legislators or otherwise.

We have had during the session of 1897, as well as the one preceding — during both of which it was the honor and pleasure of the writer to take an active part in the matter of medical legislation — legislatures which, backed up in both instances by fearless and honest State governors, stood as bulwarks between the people and covetous bodies of men anxious for privileges, the possession of which could only act disastrously on the public welfare; and in the case of medicine at least, the profession, as well as the great public it represents, cannot say too much in the praise of these public servants.

Legislators, when in doubt as to the proper course to pursue in matters of medical legislation, naturally look to the legal representatives of the medical profession for advice and guidance, realizing that the profession is the proper and natural guardian of the public health, and that its legal representatives, the State societies, representing the various schools of medicine, should be the mouthpiece of the profession.

The medical profession of the State of New York is to-day in a position where it may, with very little effort, absolutely control medical legislation; a position it has attained after years of persistent struggling against not only enemies from without, but also those who have weakened the cause more than all else, namely, members within the ranks. This opposition from within, however, becomes less and less, and the time is not far distant when it will entirely cease.

The profession of this State has succeeded in having enacted medical laws which make the standard as high as anywhere in the United States; indeed, it is higher than in many places, and the registered physician of New York, armed with a regent's certificate, has the proud consciousness of knowing that he is as thoroughly qualified to practice medicine as any individual

in the world. The study and training necessary to bring about such a condition as this, must, of necessity, prevent many incompetent people from entering the ranks of medicine, although it is doubtful if there will be a diminution in the number of those who will acquire the right to practice; it will simply mean that those who do acquire the right will be better qualified. One of the objections made to the raising of the standard of medicine is that the whole thing savors of trade-unionism, and that medical men already possessing the right to practice desire to exclude competitors; the advocates of this plea believing that more rigid requirements would lessen the number of students who would matriculate at the medical colleges. But this is not true, for, if we are correctly informed, the number, instead of diminishing, is steadly increasing, and the students of to-day are better qualified to take up this most important calling than ever before. No! the idea of lessening competition played no part in the promulgation of more stringent medical laws; the idea was, and is, to protect the public from incompetent and dishonest practitioners, and this is the way legislators view it. This too is the only ground on which the profession can consistently stand, for when one talks of protection to the profession, for the sake of the individual, he weakens his cause. The author of this article firmly believes that if the present laws were made for the protection of the doctor alone, it would be an act of justice to repeal them. The competent medical man needs no laws for his protection; if he is competent, that in itself is his protection, and the greater the number of incompetent competitors, and the more incompetent they are, the greater will be the contrast between himself and them and the larger will be the fees he can command. There is very little doubt that medical laws, by raising the standard of medicine, have increased the competition between equally qualified men and have reduced the size of medical fees. That medical laws entail hardships to quacks and incompetents of all sorts is true, and that they protect the public by so doing is equally true; but they do not increase the fees of medical men and they never will. It may be said without fear of successful contradiction that medical laws are made for the sole purpose of benefiting the public and protecting it against quacks and charletans, and that is the only just reason why such laws should be on the statute books.

The legislative committees of the various medical bodies of this State found it necessary to use a great deal of influence to defeat some of the pernicious measures introduced in the legislature of 1897, but at no time were they compelled to admit that they had used up all their resources, unless it was in the case of a bill designed to abolish the regents' examination, which passed both assembly and senate, and, on the adjournment of the legislature, awaited the governor's signature. This bill, which was supposed to have dropped out of sight, in the hurry of the last week of the session, was brought forward and passed without an opposing vote; a proper presentation of the facts to the governor, however, was sufficient to cause its death. There was not a bill that the State societies opposed which became a law; and the only one, excepting that mentioned above, which caused anything like a display of power, was the so-called "Optometry Bill," which failed to pass the assembly on final vote, and in the senate never reached a vote. This bill, however, has been before the legislature during two sessions, and promises to be brought forward again; it may be well, therefore, to consider just what it all means and what its chances of success are. The advent of this effort to obtain the legal right to practice medicine without complying with the medical laws was the introduction in the legislature on February 6, 1896, by Hon. P. J. Andrews, member of assembly from the 26th New York District, of the bill "To incorporate the Optical Society of the State of New York, etc." This bill exempted physicians from all its provisions and gave the optical society the right to examine and license opticians, giving them the right to fit glasses to people's eyes. This was simply an effort on the part of certain opticians to limit competition, for if they chose to do so — had the bill become a law — they could have refused to permit any optician not then in business to ever enter into it. This was amended so that the regents had the appointing power, but they were compelled to appoint from a certain number nominated by the optical society. This really did not alter the actual condition at all, as the regents would have been compelled to appoint as examiners the society's nominees. The bill failed on final vote, but there is this to be said about it, the effort to pass this bill was made and carried on by Mr. Andrews in a straightforward and honest manner so far

as we know, and when a man fights honestly we must admire his methods, even though we may not be in sympathy with his cause; but there is one fact connected with this gentleman which it will be well to remember in connection with others. Mr. Andrews was returned to the legislature of 1897 by a very small plurality, which, had the medical men of his district been so inclined, could easily have been reversed. A member of the legislature who votes against the medical profession in its efforts to protect the people is an enemy to the public, and it is the duty of medical men, as well as all good citizens, to prevent, if possible, the return of such an individual to a position of public trust. Strange to say, this gentleman did not vote in favor of the opticians' bill in 1897, although he did not vote against it; he, in common with a number, didn't vote at all; but it should be and is the duty of his medical constituents to get his pledge to vote against it and all similar measures should future occasion arise.

The Optometry Bill of 1897 was quite different from that of 1896, although the underlying principle was the same, namely, the desire of certain unqualified individuals to obtain medical privileges and limit competition.

The bill read as follows:

AN ACT to regulate the practice of optometry in the State of New York.

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

SECTION 1. It shall be the duty of the board of regents of the state of New York, on or before the first Tuesday in May of each year, to appoint four persons versed in optometry, who shall compose the state board of examiners in optometry.

§ 2. It shall be the duty of the board of examiners to examine all persons who engage in the practice of optometry in the state of New York, and to keep a record of all such qualified persons.

§ 3. Certificates shall be issued by said board of examiners to such duly qualified persons who shall pass the examination, and who shall pay a fee of (fifteen) dollars before taking the examination, and a fee of (ten) dollars upon the issuance of a certificate.

§ 4. The said board of examiners shall confine its examinations to such knowledge as is essential to the practice of optometry.

§ 5. Every person before beginning to practice optometry in this state, after the passage of this act, shall pass an examination before the board of examiners.

§ 6. Every person who is engaged in the practice of optometry at the

time of the passage of this act, shall, within ninety days thereafter, file an affidavit in proof thereof, with the board of regents, who shall make and keep record of such person, and shall, in consideration of the sum of five dollars, issue to him or her a certificate of registration.

§ 7. All persons entitled to a certificate of registration under the provisions of section six, shall be exempt from the provisions of sections three and five of this act.

§ 8. Any person entitled to a certificate as provided for in section six of this act, who shall not within ninety days after the passage thereof make written application to the board of regents for a certificate of registration, accompanied by a written statement, signed by him or her, and duly verified before an officer authorized to administer oaths within this state, fully setting forth the ground upon which he or she claims such certificate shall be deemed to have waived his or her rights to a certificate under the provisions of said section.

§ 9. Every person to whom a certificate of examination or registration is granted shall display the same in a conspicuous part of his or her office wherein the practice of optometry is conducted.

§ 10. Every person authorized to practice optometry in this state shall, on receipt of his or her certificate, and before beginning to practice, register at the county clerk's office of the county wherein he or she intends to practice, in a book to be kept for that purpose his or her name, office and post-office address.

§ 11. The clerk of the county shall, upon the payment to him of one dollar, make registry of any person provided for in sections three and six of this act.

§ 12. All fees not otherwise provided for in this act shall be paid to the board of regents, who shall pay out of the same all proper expenses incurred under the provisions of this act.

§ 13. It shall be unlawful for any person, on and after the first day of August, eighteen hundred and ninety-seven, to practice optometry in this state, unless he or she shall have been granted a certificate as provided in sections three and six.

§ 14. Nothing in the preceding sections of this act shall be construed to be applied to persons who sell spectacles or eyeglasses, without making pretentions to scientific knowledge or skill in adapting them to the eye.

§ 15. All physicians who have been registered and in practice in this state prior to the passage of this act shall be exempt from all of its provisions.

§ 16. All violations of the provisions of this act shall be deemed misdemeanors, and shall be punished as such.

§ 17. The practice of optometry is defined as follows, namely: The employment of subjective or objective mechanical means, or both, to determine the accommodative and refractive states of the eye and the scope of its functions in general, for the purpose of adapting glasses to the sight.

§ 18. This act shall take effect immediately.

This bill was introduced January 28, 1897, and word was immediately sent around to the various medical societies urging that protests be sent at once to the legislature. The action taken by these medical bodies was more or less independent in its character, and, while it secured the defeat of the bill, we have thought it might have been more systematically arranged. Three organized bodies, however, worked together, and every effort either of them made was indorsed by the other two; these three bodies were the Medical Society of the State of New York, the Homœopathic State Medical Society and the Medical Society of the County of New York; indeed, the success of the medical profession in the matter of medical legislation during the session of 1897 was due to the union of our State Society and the Homœopathic State Society, and the fact was, we believe, clearly demonstrated that this union, which has been made possible by our existing laws, is the safeguard of the profession; and the stronger it is cemented the more fully will these organizations fulfill the duties for which they were formed, namely, the protection of the public.

The first move on the part of the profession against this bill was to notify the medical society of every county in the State of the fact that it had been introduced, urging them to enter vigorous protests at once; here we found our first weakness, and we call attention to it in the hope that it may be remedied before the next legislature convenes.

There are in the State of New York four counties having no medical society,* or at least none in affiliation with the State society,† and the importance of this is demonstrated by the fact that the representatives of Genesee, Saratoga and Wyoming counties, each county having one assemblyman, voted in favor of the "Optometry Bill." Hamilton and Fulton counties together form one assembly district and the representative of this district voted against the "Optometry Bill." Fulton county has a medical society; we will refer to the importance of this again.

The next move was to communicate with the secretaries of the various medical colleges of the State. This communication read as follows:

* Genesee, Hamilton, Saratoga and Wyoming counties.

† See Transactions Medical Society State of New York, 1896.

February 4th, 1897.

Dear Doctor: A bill has been introduced in the Assembly of this State, known as "An act to regulate the practice of optometry in the State of New York," a copy of which we forward you herewith. It makes it a misdemeanor for any physician, after its passage, who is not already registered and practicing, to practice "optometry," unless he first obtains a certificate from the Board of Regents after passing an examination. It also directs that after obtaining this certificate it must be posted conspicuously in the place where the physician practices. The contention made by the opticians who are behind this bill is that the refraction of the eye is no part of medicine; that it is not taught in any of the medical schools or colleges, and is something the physicians have taken unto themselves without right or license, to the exclusion of those who have made this a special study, and who are, therefore, the only people really entitled to adapt glasses to the eyesight; and if physicians desire to retain the right to prescribe eyeglasses, they must pass the examination in optometry, which examination is open to any one. It is the opinion of this committee that if an examination is necessary, the possession of the degree of doctor in medicine should be a requisite preliminary. If the views of your faculty coincide with ours, will you not take the necessary steps protesting against the bill at present before the Legislature? We enclose you also a copy of a circular letter this committee has placed in the hands of every Senator and Assemblyman in the State.

(Signed.) COMMITTEE ON LEGISLATION.

This letter had the desired effect; many of the medical colleges took action in the matter although few of them acknowledged receipt of the committee's communication.

The third step was to send to each senator and assemblyman a protest, a copy of which reads as follows:

To the Members of the Senate and Assembly of the State of New York:

GENTLEMEN: — A bill was introduced in the Assembly, and referred to the Committee on General Laws, against which the medical profession of the State of New York desires to offer a decided protest. The bill is Assembly Bill No. 459, and is known as "An act to regulate the practice of optometry in the State of New York."

There is no question that for a person to hold glasses before the eyes of another, and to keep changing them until the person tested finally tells the first person which glass enables him to see the best, is a very simple matter, and something that any one could do with very little practice. If this were all there was to be said on the subject, it would seem like much ado about nothing; but the subject is a much more serious one than the putting on of glasses to relieve poor vision. Many of the conditions affecting the sight are due to much deeper troubles. Bright's

disease of the kidneys, heart troubles, affections of the nervous system, as diseases of the brain and spinal cord, not occasionally, but frequently, show themselves for the first time in some defect in the vision, which the trained oculist recognizes at once and institutes appropriate treatment, thereby prolonging and even saving life, to say nothing of preserving sight. These cases are so common that hardly a day passes but some poor unfortunate presents himself at the free clinics and hospitals of our large cities who has been under treatment by some one of the so-called "refracting opticians," trying glasses, one after another, for a period extending over months, until it is finally decided that he needs medical treatment, and the doctor finds that the disease, which might have been relieved if noted earlier in its course, has reached a stage where nothing can be done.

The plea of extortionate fees charged by oculists should have no bearing in this case, but while it is true that some physicians charge large fees and find many people willing to pay them, the average fee is very small, and if patients are too poor to pay small fees there are many hospitals where they can get examination and glasses, if needed, for nothing. The fitting of glasses to the eyes is a part of the teaching of every first-class medical college in this State, besides which there are post-graduate medical classes where nothing else is taught. Besides the iniquity and harm the passage of this bill would work to the community, it would surely be an act of injustice to require that a medical graduate who had passed a regents' examination, then entered a medical college, where he had been compelled by law to study four years in order to be able to treat eyes and fit glasses, and finally passed another regents' examination before he could get the right to practice medicine in this State, should be compelled to go again before the regents and pass an examination in optometry along with jewellers, opticians, or other persons who had no medical qualifications whatsoever. Opticians, as business men, do not require protection any more than physicians or cobblers need protection. The medical profession insists on stringent medical laws, not for the protection of its members, but for the protection of the public against charlatans and quacks. There is no question in the minds of the leading medical men of this country that the fitting of glasses ought not to be in the hands of any but graduated medical men; and the Medical Society of the County of New York, representing over fifteen hundred medical men, begs of you, through its Committee on Legislation, to defeat this bill, and thereby protect the public from an army of incompetent men who by its passage would secure a legal position, making them secure against successful prosecution for violation of the medical laws.

We further respectfully petition you to refuse your sanction to any bill conferring medical privileges that seek to evade the requirements of the present laws governing medical practice.

(Signed)

FRANK VAN FLEET, M. D., *Chairman,*
D. B. ST. JOHN ROOSA, M. D.,
EGBERT H. GRANDIN, M. D.,
CHARLES E. NAMMACK, M. D.,
WILLIAM R. PRYOR, M. D.,
Committee on Legislation.

The medical profession was aroused; medical societies not in affiliation with the State society were interested; medical journals took the subject up; the opticians aired their "grievance" in the lay press. It was thought by some of our colleagues that we ought to do the same; indeed, it was contemplated, but we considered finally that we would reserve this for an emergency. Of course we also sent protests to the speaker of the assembly and the chairman of the committee to which the bill had been referred, and asked for a hearing. These protests brought the following response:

ALBANY, N. Y., *February* 4th, 1897.

Notice is hereby given that a hearing on Assembly bill, printed No. 459, introduced by Mr. Horton, will be had before the General Laws Committee, in Room No. 7, second floor, on the 18th day of February, 1896, at 3 o'clock P. M.

GEORGE S. HORTON,
Chairman.

P. S. — Please notify those opposed, as I do not know them.

J. FRANK, *Clerk.*

We prepared for the hearing but were surprised to learn three days before the time appointed that the "refractionists" had been given a hearing on the eleventh, that the bill had been amended and reported, and would be passed. This was a peculiar condition of affairs; the more so as we had been in consultation with our agent — who was supposed to be on the lookout for just such movements as this — on the fourteenth, three days after this hearing, and he, either through ignorance of the fact or through neglect, failed to report it to us. On the morning of the sixteenth we received notice of this most unusual proceeding, and at once telegraphed to our friends in the assembly urging them to move the recommitment of the bill. We also wrote to the speaker of the House as follows:

Hon. James M. E. O'Grady, Speaker, Albany, N. Y.:

DEAR SIR: — Assembly Bill No. 459 was referred to General Laws Committee, and on receipt of our protest the clerk of said committee wrote us that a hearing would be had on the 18th inst., and asked us to notify those opposed, which we did. We are now informed that a hearing was had on the 11th, and the clerk writes us that he made an error in the date, which, considering the fact that the bill was reported favorably, is rather cold comfort. The entire medical profession of this State is opposed to this bill, and it seems strange that it could be reported with-

out our having the opportunity to enter a protest. Can you not order a recommitment? We should hate to think that the error on the part of the clerk was made with malice aforethought, but it is certainly a blow to the cause of justice. Very truly yours,

COMMITTEE ON LEGISLATION.

This letter brought the response that the bill had been recommitted and the hearing would be given on the eighteenth. In addition to this we received explanatory letters from the chairman of the Committee on General Laws and from the clerk; the excuse being that an error had been made.

As we said above, the bill had been amended and it was claimed that the amendments removed the objections of the medical profession; also that these amendments were made by the medical profession. These amendments were in sections one, six and fifteen. Section one was made to read: It shall be the duty of the board of regents of the university of the State of New York, on or before the first Tuesday in May of each year, to appoint four persons versed in optometry, who shall compose the State board of examiners in optometry, *and one of whom, at least, shall be a registered and practicing physician in the State of New York.*

Section six was made to read: Every person who *has been* engaged in the practice of optometry *for at least two (2) years prior to* the passage of this act, shall, within ninety days thereafter, etc.

Section fifteen was made to read as follows: All physicians who *are or hereafter shall be* registered and practicing in this State shall be exempt from the provisions of this act.

At the hearing on February 18th the medical profession was well represented and ably seconded by a delegation of reputable men doing business as opticians, who contended that they had the right to do business as before without taking unto themselves the right to test eyes and fit glasses. They said that in order to be competent to fit glasses properly one needed a medical education, and that the giving of a privilege such as this bill contemplated would be unjust to a confiding public, and an act which would work harm to the community. These law-abiding opticians, who were opposed to the passage of this bill, outnumbered the "refracting opticians" who favored it, many times,

and should have been, in themselves, sufficient to defeat it; indeed, there is no doubt that they contributed very much toward its defeat.

The medical profession claimed that not only did they protest against this amended bill, but the amendments themselves showed more clearly than anything had heretofore done the true animus of the whole thing, namely, that a few storekeepers who were already violating the medical laws, fearful that the time was not far distant when they would be compelled to desist, desired, first, to obtain the legal right to continue in the work they were doing, and second, to limit, by law, all competition.

This amended bill made it the duty of the regents to appoint a board of examiners, one of whom, at least, should be a physician; if the regents desired, there was nothing to prevent them from forming a board composed entirely of physicians.

Section four of the original bill, which was not changed in the amended one, said that the examiners should confine the examinations to such knowledge as is essential to the practice of optometry. Section fifteen exempted all physicians. Indeed, the bill as introduced in the senate, later, made a board composed of *four duly licensed physicians versed in optometry.*

If the regents appointed a board of examiners composed of physicians, and this board decided that the possession of the degree of M. D. was essential to the practice of optometry, as it would have had a legal right to do, then the only person who could qualify for such an examination must be a physician, and as all physicians would be exempt it would be absolutely impossible for any body to take the examination. Opticians who had been in business for two years were required only to pay a fee of five dollars for a certificate, which section nine said must be hung in a conspicuous place in his or her office. And so a handful of "refracting opticians" or "Doctors of Optometry" flaunting their legal qualification, secure against any possible additions to their ranks, would control one of the greatest sinecures extant.

The medical profession denied that this bill removed the objectionable features of the original, and furthermore declared that the profession would oppose any bill that conferred medical privileges on any class of individuals unless one of the requirements was a compliance with the medical laws of the State.

Counsel for the "optometrists" asked if we would withdraw our opposition if they admitted the necessity of a medical education? We answered yes if the bill exempted nobody. This, of course, they would not agree to.

The hearing closed with the general impression that the "refractionists'" cause was a lost one. During the whole of these proceedings the air was full of offers, on the part of the sponsors of the bill, to compromise. They admitted the necessity of a medical education, and were willing to concede anything if we would allow a bill to pass giving them protection. One of them was willing that only opticians who had been in business ten years should be exempt, which would, of course, limit the number to a very few; but the authorized representatives of the various medical societies were unanimously agreed on no compromise.

It is needless to go into further details; suffice it to say that the bill failed; nor can we mention individually the medical men, who, at considerable inconvenience and expense to themselves, contributed to its defeat; but we will repeat, that our success in this, as in other legislative matters, was made not only possible, but certain, by the union of the forces of the Medical Society of the State of New York with those of the Homœopathic Medical Society of the State of New York.

We have already continued this article beyond the limits we had intended, yet much remains to be said, and we feel we cannot close until we have pointed out — as it appears to us — the manner in which future efforts to defend the medical laws can be made to best advantage.

Physicians are too apt to consider that politics are not within their sphere, and so, with some, it is only necessary to say that a confrére is a medical politician in order to condemn him; but a man owes a duty to his state as much as he does to his family, himself, or his profession; indeed, in proportion as he neglects the former, does it react on the latter. It will not do to leave the adjustment of medical legislation to legislators alone, because they admit that they do not know what is necessary. Let us narrate an incident which exemplifies this. In 1896 we appeared in opposition to the original opticians' bill. We presented a letter of introduction to one of our senators who told

us he was opposed to the bill if we were. In 1897 this same gentleman told us he was in favor of the bill. When we expressed surprise he said he thought we were in favor of it, but, if we were opposed to it, he would vote and work for its defeat. His words were these: "Doctor, I am a lawyer and do not pretend to know anything about medicine. I am willing to be guided entirely by the expressed wishes of the medical profession in the matter of medical legislation." This we have found to be the universal feeling in the State Capitol. The State of New York is proud of, and places unbounded confidence in, its medical profession; this is an honor we cannot prize too highly, nor guard with too great care; it places the blame where it belongs, and makes it possible to say, that, when medical laws, which are pernicious in their character, receive the sanction of the legislature, it is due entirely to the neglect of the medical profession.

In 1895 the legislature passed, and the governor signed, a bill incorporating the Pedic Society, conferring on chiropodists the right to perform minor surgical operations on the feet. During the past session of the legislature one of these gentlemen waited on an assemblyman, sending in his card as Dr. ———, and proceeded to enlighten the legislator on his, the "pedic doctor's," wonderful skill in removing tumors from different parts of the body, mentioning especially the female breast. They contemplate, so we are told, club-foot operations, as well as various others. The enactment into law of this measure was due to the fact that the profession did not oppose it. Indeed, we are informed that its passage was advocated by a medical man now occupying a public position.

Following in the steps of this came the efforts of the "refracting opticians," and, as one of our committee remarked, "next year we will have a pessary society," which is equivalent to the words of Rogers "where one sin has entered, legions will force their way through the same breach." The medical profession must stand in that breach, and keep back the horde of incompetents which is eager to rush through and fasten its death-dealing, blood-sucking tentacles on suffering humanity. How can this best be accomplished? It can best be done by combining our forces and systematizing our work. The medical societies of the

State, being the legal representatives of the profession, should superintend and direct all legislative efforts, whether aggressive or defensive. The legislative committees of the State societies, representing the various schools of medicine recognized by law, should work hand in hand, as, indeed, they do. Each committee should have a representative in every county in the State, who, in turn, should have a working colleague in every assembly district in that county, if not in every election district, which would be better. By a system such as this it would be possible for the chairman of the committee on legislation of the State Medical Society to place before every member of the legislature the facts in every matter of legislation affecting the public health.

Let us give an illustration of what has been accomplished by persistently placing before our representatives in the legislature our views and desires in a matter of this kind. In the upper part of the city of New York is an organization of medical men known as the Harlem Medical Association. Its place of meeting is located in the thirty-first assembly district and eighty per cent of its members reside in the twenty-third, thirty-first, thirty-third, thirty-fourth and thirty-fifth districts; the representatives from these districts, without exception, voted against the Optometry Bill. South of and contiguous with the section embraced in these five districts are the twenty-first on the west, and the thirty-second on the east. In the twenty-first only three members of this association reside, and the assemblyman representing this district failed to vote. In the thirty-second only two members of the association reside and their assemblyman voted in favor of the bill. There is very little, if any, doubt that the result in these seven districts was in proportion to the labor expended, and that the two assemblymen who did not vote as the medical profession desired, would have done so had the matter been placed before them in its true light. This is the key to the solution of the whole subject of medical legislation; legislators are willing to be guided in matters of medical legislation by the expressed wishes of the medical profession.

Another suggestion has been made which we believe to be a most important one; that is that the State societies should devote more time to this subject. Instead of devoting fifteen minutes

to the reading of the report of the legislative committee, at least one whole day of the annual session should be devoted to matter of this kind; free discussion of what is necessary for the proper protection of the public health should be encouraged, and, as these meeetings are held in Albany during the session of the State legislature, it would not be amiss if members of the legislature were invited to be present and take part in the discussions. Many of our representatives come from sections of the State where the medical profession cannot reach them; but while they are in Albany if they were invited to attend the legislative session of the State Medical Society, or better still, a conference of the legislative committees of the State societies, it is extremely doubtful if any bill like the Optometry measure could ever again receive seventy-three votes, if, indeed, any one could be found to introduce it.

Let us illustrate the truth of this statement and we are through. The Optometry Bill of 1897 was introduced by Hon. Geo. S. Horton, representative from Wayne county; Mr. Horton was chairman of the Committee on General Laws, and the bill was referred to his committee; if we could have persuaded him of the iniquity of this measure it would never have gotten out of committee. We tried to convince him, but he had been too thoroughly persuaded by the other side; his arguments were those of the "refractionists" which are as follows:

That ophthalmology was a separate profession; that the oculist, the physician, the optician, the optical mechanic, the optical goods dealer, the jeweler and the watch-maker all practiced it with more or less proficiency, and it was necessary, in framing a bill, to recognize the vested rights of all those, who, in the absence of prohibitory laws, had been encouraged to enter into its practice. That the time has arrived when laws should be enacted restricting them, and, as was done when medical laws were enacted, those lawfully engaged in the practice should be exempt, otherwise the law would be retroactive and unjust.'

This was the public argument in brief; there was another, entirely different, which, had it been made public, would have settled the efforts of the "optometrists" forever. The answer to this public argument was very simple. That ophthalmology was no more a separate profession than was gynæcology, der-

matology, neurology, laryngology, otology, etc., etc., nor could it, with safety to the public, be made so. All these separate departments of medicine went to make up the medical profession, and in order for one to practice intelligently in either, it was necessary that the ground-work, which comprehended them all, namely, a medical education, should first be obtained; then the taking up of these specialties was a matter of individual choice or circumstances; in undergraduate medical schools as much time was devoted to the study of one as another. It was true that jewelers and others pretended to fit eyeglasses to people in old age, which was really the purchaser fitting himself, as he had a right to do; but the only persons who pretended to be able to fit glasses and did it in violation of the law were the people who styled themselves "refracting opticians," and it was their assumption of knowledge, which they did not possess, although they desired the law to endorse it, that was the dangerous element in the case. The laws regulating medical practice had been enacted years ago, and non-graduates exempted had all qualified; it was too late now to ask for the exemption of "refracting opticians," or to make new laws for their benefit. If they practiced medicine now they practiced in violation of existing laws. Nor could the medical profession be held as being remiss in its duty for not prosecuting them for violation of the medical act. Either the enforcement of these laws should be part of the functions of the district attorney of the county in which violations occur, or the county should appropriate funds to enable the County Medical Society to do it. Medical men should not be compelled, as they are at present, to employ counsel at their own expense to prevent violations of the medical laws, when such laws are made solely for the protection of the public and not for the doctor.

Points such as these could be considered fully in conferences such as we have mentioned above, to the end that both legislators and physicians would have their work of subserving the interests of the community simplified.

We append hereto a list made up from the official journal of the State legislature. It will enable any one to see at a glance how his or her representative acted on the final vote on the Optometry Bill. Many of the assemblymen who voted for this

bill, we have since learned, did not fully understand the nature of the bill they were voting for, notwithstanding the labor expended in trying to place the matter before them in its true light. We trust at some future date, should this bill come forth again and they remain in the legislature, to record them as voting in favor of the people.

In the column containing the names of those who voted against this bill can be found many who worked hard for the cause of humanity, often when it would have been to their individual advantage to have taken the opposite course. We cannot mention any one person, because we might, through ignorance, do an act of injustice to another, but will say that we look on this column as constituting the roll of honor, and we trust every medical man in the State of New York will bear this in mind when the time arrives to exercise his right as a citizen at the next election, and also remember it when advising an uncertain brother.

The third column, those who did not vote and probably did not fully understand the situation, contains twenty-seven names. Of these twenty-five had votes, and it is to be hoped that their constituents will place this matter before them in its true light before another year rolls around.

If we have dwelt long on this subject it is because its importance demanded it; we told the Assembly Committee on General Laws that the law had made the medical profession the guardian of the public health, and in journeying to the State Capital to oppose the Optometry Bill we did so from a sense of duty; we called the committee's attention to the fact that members of the legislature were elected to office to protect the interests of the people and that our profession called on them to join hands with us in fulfilling our joint duties; we are proud and happy to say that we did not call in vain, and sincerely hope that it may always be said of them and of us, "Well done, good and faithful servant."

116 EAST 82ND STREET, NEW YORK.

COUNTY	Voted For	Voted Against	Not Voting	Total Assemblymen	VOTED FOR — Name and Address	Assembly District	VOTED AGAINST — Name and Address	Assembly District	NOT VOTING — Name and Address	Assembly District
Albany		1	1	1	G. T. Kelly, 82 State St., Albany.	3	J. B. McEwen, 183 Clin'n av. Alb	3	R. G. Scherer, 618 Mad. Av. Alb'y	1
					J. D. Leversee, Cohoes ...	4				
Allegany		1		1			F. A. Robbins, Angelica			
Broome	2			2	C. E. Fuller, Conklin	1				
					C. F. Tupper, Binghamton	2				
Cattaraugus		2		2			G. Matteson, East Otto....	2		
							C. H. Miller, Yorkshire	1		
Cayuga	1	1		2	W. C. Sheldon, Sennett	1	E. B. Rounds, New Hope	2		
Chautauqua	1	1		2	F. R. Peterson, Jamestown	1	S. F. Nixon, Westfield.	2		
Chemung		1		1			J. H. Halbert, Chemung...			
Chenango	1			1	J. P. Allds, Norwich.					
Clinton	1			1	E. C. Baker, Plattsburgh					
Columbia	1			1	R. Hoes, Malden Bridge					
Cortland			1	1					F. P. Saunders, Cortland.	
Delaware	1			1	D. H. Mackey, Meredale					
Dutchess	2			2	A. B. Gray, Poughkeepsie	2				
					J. A. Hanna, Dover Plains	1				
Erie	3	4	1	8	C. Braun, 15 Kane St., Buffalo		H. M. Blaisdell, No. Collins	3	H. L. Steiner, Akron	
					W. Maloney, 123 Lovejoy St, Buff		C. Coughlin, Buffalo	1		
					W. Schneider, 80 Stanton St., Buff.	4	H. W. Hill, Buffalo	2		
							N. J. Miller, Buffalo.	6		
Essex	1			1	J. H. Pierce, Bloomingdale.					
Franklin	1			1	T. A. Sears, Bombay					
Fulton & Hamilton	1			1			B. D. Brown, Mayfield			
Genesee	1			1	A. D. Sanders, Safford					
Greene			1	1					N. Sweet, New Baltimore	
Herkimer		1		1			O. H. Springer, Starkville			
Jefferson	1	1		2	C. J. Clark, Carthage	2	W. Zimmerman, Brownville	1		
Kings	14	2	5	21	H. E. Abell, 129 Park Place	12	H. Marshall, 546 Madison St	17	L. S. Bayliss, 129 Park Pl	
					J. J. Cain, 322 Van Brunt St.	6	W. L. Perkins, 1[illegible] Hanson Pl	16	E. C. Brennan, 9[illegible] Jefferson Ave	
					T. H. Cullen, 72 Carroll St.	3			G. H. M. Roehrs, 131 Vernon Ave	
					O. L. Forrester, 136 Skillman Ave	13			G. J. Asper, 635 Prospect Pl	
					A. S. French, 78 Bradford St.	21			G. W. Wilson, 612 Myrtle Ave	
					F. G. Hughes, 1004 Halsey St	20				
					J. C. Knapp, 76 Grand St.	5				
					J. Laimon, Jr., 418 DeGraw St	8				
					J. M. McKeown, 193 Adams St.	2				
					J. Murray, 185 Humboldt St.	15				
					G. H. Parshall, 173 53d St	7				
					F. Schmid, 97 Bushwick Ave.	19				
					T. H. Wagstaff, 113 Montague St	1				
					J. M. Zum, 109 Java St.	14				
Lewis		1		1			J. S. Koster, Lyon Falls			
Livingston		1		1			A. Kelsey, Geneseo			
Madison		1		1			R. J. Fish, Oneida			
Monroe	2		2	4	W. W. Armstrong, Rochester				F. E. Gott, Spencerport	4
					M. E. Lewis, Rochester.	1			*J. M. E. O'Grady, Rochester...	
									E. L. Schmidt, Amsterdam,	
Montgomery			1	1						
New York	17	13	5	35	J. P. Corrigan, 245 E. 32d St	20	C. S. Adler, 13 Orchard St	7	P. J. Andrews, 207 E. 69th St	2
					J. F. Daly, 500 E. 15th St	15	H. T. Andrews, 1251 Madison Av.	21	G. C. Austin, 36 Broad St	
					T. F. Donnelly, 151 E. 92d St	32	T. J. Barry, 3 Centre St	2	J. A. Dempsey, 341 W. 55th St.	17
					D. E. Finn, 587 Broome St	1	L. E. Brown, jr. E. 59th st	29	J. Fritz, 634 E. 11th St.	11
					J. B. Fitzgerald, 33 Sutton Pl.	24	J. P. Degnan, 424 E. 11[illegible]th St	33	J. I. Green, 1131 Lexington Ave.	20
					W. H. Gledhill, 357 W. 34th St.	11	R. Gilleland, 2522 8th Ave	23		
					E. W. Hart, 242 W. 16th St.	7	F. E. Laimbeer, 251 W. 50th St	17		
					B. Hoffman, 132 Nassau St	17	D. A. Mathewson.	35		
					W. H. Leonard, 130 Prince St.	3	R. Mazet, 257 Broadway	19		
					J. F. Maccabe, 316 W. 29th St.	9	P. H. Murphy, 135 W. 34th St	28		
					G. M. Meyer, Jr., 409 E. 84th St	30	J. Schulum, 19 Attorney St	12		
					T. F. Meyers, 421 W. 47th St	13	R. Van Cott, 77 Washington Pl	5		
					P. H. Roche, 87 Market St	4	P. W. Reinhard, Jr., 153 E. 123d St	34		
					J. J. Sullivan, 40 Second St.	10				
					T. P. Sullivan, 167 Mott St.	10				
					D. D. Tooher, 243 E. 44th St.	22				
					P. F. Trainor, 327 W. 42d St.	13				
Niagara	2			2	F. A. Dudley, Niagara Falls	2				
					H. E. Warner, No. Tonawanda	1				
Oneida		2	1	3			G. E. Philo, Utica	1	W. B. Graves, Taberg	
							W. C. Sanger, Sangerfield			
Onondaga		2	2	4			E. G. Ten Eyck, Fabius.	2	J. Bondy, Syracuse	3
							E. M. Wells, Syracuse	4	W. J. Bellen, Baldwinsville	1
									N. Benham, Hopewell Centre...	
Ontario			1	1			L. Bedell, Goshen	2	L. F. Goodsell, Highland Falls...	1
Orange		1	1	2						
Orleans	1			1	F. L. Downs, Medina					
Oswego	2			2	T. M. Costello, Altmar	2				
					L. P. Taylor, Oswego Centre.	1				
Otsego		1		1			C. B. Gorham, Burlington			
Putnam	1			1	E. W. Addis, Brewster					
Queens	1	2		3	T. F. Kennedy, Long Island City.	1	M. Cromwell, Glen Cove	3		
							H. S. McKnight, Bayside	2		
Rensselaer	3			3	G. Anderson, Castleton	3				
					W. Hutton, Jr., Troy	2				
					E. McGraw, Valley Falls	1				
Richmond	1			1	G. Garby, Port Richmond					
Rockland	1			1	F. L. Whritner, Suffern					
St. Lawrence		2		2			M. V. B. Ives, Potsdam	2		
							I. C. Miles, Edwards	1		
Saratoga	1			1	G. W. Kavanaugh, Waterford					
Schenectady	1			1	T. W. Winne, Niskayuna					
Schoharie			1	1					G. M. Palmer, Cobleskill.	
Schuyler			1	1					O. H. Budd, Hector.	
Seneca			1	1					H. M. Glen, Seneca Falls.	
Steuben		1	1	2			J. S. Harrison, Addison	1	J. Clark, Cameron	2
Suffolk	2			2	C. S. Burr, Jr., Commack	2				
					E. F. Post, Orogue	1				
Sullivan	1			1	G. M. McLaughlin, Monticello					
Tioga		1		1			D. P. Witter, Richford			
Tompkins		1		1			F. G. Bates, Caroline Depot			
Ulster	1	1		2	W. S. Van Keuren, Kingston	1	H. J. Pratt, Highland	2		
Warren		1		1			T. J. Eldridge, No. Creek			
Washington	1			1	W. R. Hobbie, Battenville					
Wayne	1			1	G. S. Horten, Wolcott					
Westchester		2	1	3			J. W. Husted, Peekskill	3	†R. S. Emmet, Jr., New Rochelle	
							A. E. Smith, Bronxville.	1		
Wyoming	1			1	M. W. Cole, Castile					
Yates		1		1			M. W. Raplee, Dundee			
Total	73	50	27	150						

Necessary to pass, 76.

* J. M. E. O'Grady, Speaker, does not vote.

† R. S. Emmet, Jr., died early in session; position not filled.

For the ANNALS.

A STUDY OF A HOSPITAL PLAN.

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Professor of Diseases of the Nervous System, Albany Medical College.

GENERAL CONSIDERATIONS.

It rarely happens in the building of a hospital that there is such an abundance of funds in hand that the question of cost can be disregarded. On the contrary, the cost of the building and that of its maintenance must, in most cases, be constantly in mind, and must be reduced to the lowest sum for which a suitable, well-equipped hospital can be built. It is with these aims in view that the accompanying plans have been made for me by Architect Marcus T. Reynolds, of Albany, and they seem to solve these problems in a most satisfactory manner, without in any way sacrificing the appearance or the efficiency of the hospital.

The plans which are presented in this paper are those for a hospital situated in a city of about one hundred thousand inhabitants, and supplying also, to a considerable extent, the towns and villages lying within a radius of one hundred miles. It is intended to accommodate about two hundred patients (of whom, approximately, two-thirds shall be charity and one-third paying patients) and one hundred attendants. It is probable that more attendants will be actually required, but they need not all sleep in the hospital. The hospital is to contain also an out-patient department, the cases in which, as well as those in the hospital, are to be used for clinical instruction in connection with a medical college. Forming part of the hospital is also a training school for nurses.

In order to fulfil all these requirements, there must be supplied a building for the administrative offices, and in this building, if strict economy must be practiced, can be placed the large amphitheater for clinical instruction, and, closely connected with the amphitheater, one or more special operating-rooms. This administration building must be centrally located with reference to the hospital wards, which latter buildings should be constructed on the pavilion plan, which yields the maximum of light and air, and gives to each ward a very desirable, separate and

distinct individuality. In addition to the administration building and the ward pavilions there must be a nurses' house or pavilion, a building for the female help, a separate building or place for the male help to sleep, a kitchen, a laundry and a boiler-house, which latter building should also, if possible, be centrally located.

One of the first questions to be considered is, How many stories high shall the hospital be? When the buildings are but one story high it is necessary to spread the hospital over a large area, and the cost of building and of maintenance is increased, and the doctors are exhausted by long tramps from ward to ward, and in emergencies may not readily reach the patient. On the other hand, if the buildings are six or eight stories high, although the cost of building and of maintenance is reduced, yet the lower stories are apt to suffer somewhat in regard to light, and in case of fire (an extremely rare occurrence in modern hospitals) there is much more danger of loss of life. A mean height of three or four stories would, therefore, seem desirable.

The erection of the hospital in its relation to the points of the compass is also of importance. The wards should run in general from north to south, in order to receive the maximum of sunlight, and at the same time be placed, if possible, at right angles to the prevailing summer wind.

To any large hospital there should be but one main entrance, which should be open both day and night, and through which all employees and patients (except the private ones) should pass, so that a record can be kept of their going and coming. As this entrance must of necessity be a great thoroughfare, it is desirable to remove it as far as possible from the administrative portion of the building. Therefore it seems desirable to place this entrance in the basement, and to do away with the necessity of every one ascending the front steps, which usually disfigure a building, and always darken the rooms behind it. By having the entrance to the hospital, the entrance to the dispensary and the entrance for the ambulance close together, one porter can overlook them all, and patients mistaking their way will not have to be sent around the building to distant entrances.

GENERAL DESCRIPTION OF THE HOSPITAL.

These general needs have been fulfilled in these plans in the following manner: The administration building is a three-story building, with high basement, facing the south (or southeast), one hundred and thirty feet long, and flanked at either end by a three-story and basement pavilion projecting towards the south. The height of the basement story is eleven feet, that of the upper stories fourteen feet each, and under the roof is an air space of three feet. The buildings will be imposing from their mass and their proportions, irrespective of any ornamentation, and will recall in their general outline many of the palaces and public buildings in Europe. This resemblance will be heightened by doing away with all steps and approaches, and by placing the entrance to the hospital in the basement.

ADMINISTRATION BUILDING.

In the basement, the height of which is sufficient for a monumental treatment, are the three entrances to the hospital. Three arches, open in summer, but closed in winter by doors of glass and iron, give access to a great vestibule, which forms an imposing entrance to the hospital.

Here an official will be stationed, whose duty it will be to keep in sight all those who enter or leave the hospital. Off this vestibule give three doors. The one at the right opens on the dispensary waiting-room, and beyond are the rooms which form the department of the public dispensary. The door at the left is for those seeking admission to the hospital as patients, and gives entrance to the waiting and admitting-rooms, with their examining and bath-rooms. The central door, which is directly opposite the elevator and staircase, is the general entrance to the hospital.

Patients arriving by ambulance can be taken to the admitting-rooms or by the elevator to the wards or to the etherizing and operating-rooms. Two small rooms, enclosed by partitions of glass and iron, flank the staircase. One is used for the litters required for ambulance service, the other as a pharmaceutical dispensary in connection with the public waiting-room. Here are kept the medicines in common demand, while the prescriptions are received by the lift from the dispensary above.

The rear of the building has on one side a large room for machinery, and on the other the mortuary rooms.

On the first floor of the administration building are a large parlor or governors' room, a visitors' room, an apothecary's office and laboratory, a sitting-room, reading-room, microscopic-room and chemical laboratory for the house doctors, offices for the superintendent, for his clerk and for the head of the training school, a central telephone station, from which all parts of the hospital can be reached, and water closets for the doctors and for male and female visitors.

On the second floor of the administration building, along the front, are bedrooms for the house doctors and parlor and bedrooms for the superintendent's family. On either side of the elevator and main stairway are an etherizing-room, a recovery-room and a hallway open up to the skylight in the roof. Back of the stairway is the amphitheater. In a hospital of this size the amphitheater must be used for both medical and surgical clinics. When it is used for medical clinics, glass doors close it off from the passageway on either side, but along either of these passageways surgical cases can be brought from the etherizing-room to an operating-room on either side, under the amphitheater. These operating-rooms have a northern light, a side light and also a skylight, the latter being shown on the plan of the third story. These operating-rooms are under the amphitheater, but with a double ceiling and deadening all objectionable sound can be cut off. There is also a sterilizing-room centrally situated for all the operating-rooms, a room for the doctors and one for the nurses to make their antiseptic toilets, and cases for instruments, bandages, supplies, etc. Back of the sterilizing-room is the staircase for the students to ascend to the amphitheater, and above the sterilizing-room, and yet under the seats, is a hat and coat-room for the students; while in the basement, at the bottom of the stairs, is a water closet for them. The seats in the amphitheater should have a pitch of 45°.

On the third floor of the administration building, along the front, is a row of large private rooms, some of which may have fireplaces, and one of which has a private bath-room and water closet. On one side of the stairway, and close to the kitchen, is the doctors' and superintendent's dining-room, and on the

other side is the apothecary's bedroom. Back of the stairway is the top of the amphitheater. Above the level of the upper seats the amphitheater is made circular, leaving a triangular skylight at each corner for the operating-rooms below. The roof will be constructed of glass and iron, and small steam pipes will be run under the glass roof to prevent excessive chilling and condensation.

CHARITY WARDS.

It has been a common custom to build the different pavilions of a hospital parallel to each other. The principal objection to this arrangement is that, to save unnecessary walking, these pavilions must be built not more than forty or fifty feet apart, leaving narrow spaces in which, even with low pavilions, there is a diminution of light and fresh air; the soil between the buildings, wet with snow or rain, will not dry readily, unless it be very sandy, and may cause the wards and rooms to be damp. The outlook from the windows on to the neighboring wards is gloomy and depressing, encouraging a morbid condition of mind, into which hospital patients are only too prone to fall. Moreover, in this arrangement each ward must have its separate dining-room, pantry, water closet, etc.

In the plan here given the charity wards, which are situated at the western end of the administration building, are placed at right angles to each other and brought in contact end to end, forming an "L" shaped ward, which is new, as far as I know, in hospital construction, and which possesses many advantages. The view from the wards is unrestricted; both light and fresh air have free access to the windows; there are no courts which can become damp; the dining-room and pantry for the two wards can be united, making them larger and pleasanter; the plumbing can be concentrated and cheapened, while leaving to each ward its individual bath and closets. It is true that, if the hospital faces the south, one of these pavilions will receive the sun on two sides only, but it will have the sun on one side all day long, and if the ward is made a little narrower than its fellow the sunlight will carry well across it and obviate this difficulty, and if this ward be at right angles to the direction of the prevailing wind in summer, it will be cool at that season of the year.

The relation of this ward to the sun will be somewhat improved by having the hospital face southeast.

In the "L" shaped building formed by the junction of the two pavilions, the pavilion pointing towards the south is entirely for surgical cases (surgical pavilion), while that pointing towards the west is entirely for medical cases (medical pavilion). The basement of the surgical pavilion consists of store-rooms for patients' clothes, for extra ward furniture and for other things, and there is also in it a disinfecting-room, where infected articles can be washed in disinfectant solutions, and where things even as large as a mattress can be disinfected by steam, or by formaldehyde vapor, etc. A large steam chest projects through the wall of this room. Through one end of this chest are placed the things to be disinfected, and they can be taken out from the other end, in another room, disinfected. The basement of the medical pavilion is divided into a sitting-room and sleeping-rooms for the male help. The first and second stories of the surgical pavilion, as also the first and second stories of the medical pavilion, contain a large, light and airy ward containing twenty or twenty-two beds, and giving more than eighteen hundred cubic feet of air to each bed; the windows being so arranged that two beds shall stand in the space between two consecutive windows. At the end of each of these wards is a fireplace, on either side of which is the entrance to a sun-room so large that beds can be rolled into it. In the sun-rooms are iron stairways, which serve as fire-escapes, and by which also patients can ascend to a roof garden on the top of each pavilion. Connected with each ward is an isolated room, where very sick patients can be kept quiet, and to which dying patients can be brought to die, and from which they can be removed after death without disturbing the other patients in the ward. Each ward also has its closet, and also a well-lighted room to which patients can be brought for examination. In this latter room the nurses keep their medicines, apparatus and records, but are not expected to loiter there. Each ward also has its own entrance to the water closets, wash-rooms, spray baths and bath-rooms. Most of the partitions in the plumbing section are of hammered glass and only nine feet high, allowing a better distribution of light and air. In this department is also a small space where the

excreta of patients can be kept, if desired, for the doctor's inspection. There is also a chute by which all the soiled linen from the charity wards can be thrown down to the basement. The nurses have a separate water closet and a place to throw slops, above which, on the wall, is a wire rack to hold bed-pans, urinals, etc. The wards have a large dining-room in common, connected with which is a large pantry, in which comes down the lift from the general serving-room. The two wards have also a stairway in common.

In this plan, for the sake of symmetry, the surgical pavilion is made as wide as the pavilion for private patients. Consequently the surgical wards are made so wide and short that the beds are brought nearer together than is desirable. It is a question whether this can be better obviated by putting a row of beds down the middle of the ward, or by making the surgical pavilion longer and narrower.

The obstetric ward is on the top of the medical pavilion. The wards on the north side are for the healthy women expecting to be confined. The delivery-room is large enough to contain all the necessary sterilizing apparatus and instruments. After the labor the patient passes through the puerperium in a separate room, and in the course of the second week is moved to the general recovery ward. The top story of the surgical ward is divided into a children's ward, some small rooms for mothers with their children, and four three-bedded wards for private patients who can only pay a small sum. In this plan the children's ward is made small, because such cases are better cared for in children's hospitals. It might be omitted altogether and a gynæcological ward substituted for it. Some of the halls and pantries on this floor seem to have insufficient light, but it is intended that they be lighted by skylights, since they are at the top of the building.

PAVILION FOR PAYING PATIENTS.

The pavilion for paying patients projects south from the eastern end of the administration building. To this no second pavilion at right angles, converting it into an "L" shaped building, has been added. The reason for this is that the hospital as already planned can accommodate nearly two hundred patients, and it seems wise to leave an opportunity to make an

addition to it, if at some future time such is needed. A pavilion pointing east, and joined to the private pavilion, can be added at any future time, and then it will be better known whether this addition of fifty or sixty patients shall be added to the list of the charity or to that of the paying patients, and the pavilion can be planned accordingly.

The basement of the pavilion for paying patients is divided into rooms for dispensary work. Each room is made large enough to be used for teaching sections of a class of medical students. The hall between these special rooms is lighted not only from the end, but also by windows in the upper part of the wall between it and the special dispensary rooms. Connected with the dispensary are water closets for men and women, a bath-room and a small lift connected with the apothecary's office on the floor above, by which prescriptions go up and medicines come down.

The first and second floors of the pavilion for paying patients are divided into rooms of fair size; some have fireplaces, some have bath-rooms connected with them, and all have stationary washstands. These washstands, however, have no direct communication with the drain. The pipe from them opens over a sink in the basement, and thus a complete air-break is made, and sewer gas cannot possibly get into the rooms. There is a private parlor on each floor for visitors to wait in, and on the first floor is a private entrance. The hall between the rooms is ten feet wide, so as to separate them in the interest of privacy and freedom of noise as much as possible, and the doors of the rooms are not opposite, so that a patient cannot look from one room into the opposite one. At the end of the hall is a sun-room, in which is a fire-escape, by which, also, patients can ascend to a roof garden on the top of the pavilion. On the third floor of the pavilion for private patients the hall is narrower, the rooms are smaller, and there are three rooms, each containing four beds, for the accommodation of patients who can pay something, but cannot afford to pay for a private room. On each floor of this pavilion there is a separate water closet and bath-room for men and for women, a nurses' water closet and place to throw slops, and a clothes chute, by which soiled linen can be thrown down to the basement.

Nurses' Pavilion.

We have next to consider the pavilion for the trained nurses and that for the female help. Inasmuch as these buildings are used mainly for sleeping-rooms for healthy persons, there can be no serious objection to their pointing towards the north. The servants' pavilion can therefore be added to the angle of the "L" shaped charity pavilion, converting it into a three-fold, or trilobate, building; while the nurses' pavilion can continue the pavilion for paying patients directly backwards. There is thus formed at each end of the administration building a series of buildings, which, while allowing a free circulation of air in all directions, makes the whole hospital construction very compact, economical in construction, easily heated and ventilated, and easy of access in all its parts. Both the nurses' pavilion and that for the help can be shut off from the rest of the hospital by doors with spring locks and by strict rules, and can be kept inviolate as well as though separated by a corridor. The stairs to both these pavilions are put on the outside, to serve as a fire-escape and to reach the roof garden on the top of the pavilion. The pavilion for the nurses and that for the help are four stories and a basement high. The stories being lower in the clear than those of the main hospital the buildings will be no higher, the four low stories reaching the same height approximately as the three high ones. Entrance to each story can be made from the stairway at the southern end of each building.

The basement of the nurses' pavilion is divided up into trunk-rooms and store-rooms. On the first floor of this pavilion is a dining-room and pantry, a parlor, a reading-room, a study, and accommodations for the head nurse and the assistant head nurse, with private bath-rooms. The upper three stories of the nurses' pavilion are divided into bedrooms, each nurse having her own room, and to every fourteen nurses are supplied two bath-tubs and one spray bath, so that each nurse can take a bath every morning, and all can bathe in a short time.

Pavilion for the Female Help.

The basement of this pavilion is occupied almost entirely by the laundry and drying-room (the latter placed close to the boiler-house and also to the ventilating stack for obvious

reasons); a small store-room for kitchen supplies being the only other room in this basement. The kitchen coal is kept in a vault at the bottom of the elevator. In the laundry is a separate washing-room for the clothes of the doctors and nurses from those of the patients, an ironing-room and a linen-room, just above which, and connected with it by a lift, is a room for sewing and mending. On the main floor of this pavilion are a pantry, with lift from the kitchen, a dining-room for the help, a sitting-room, a parlor and bedroom for the housekeeper, and two bedrooms for any small boys that may be employed in the hospital. The next two stories of this pavilion are occupied by bedrooms for the help, three women sleeping in the larger rooms.

The upper story of the servants' pavilion is the kitchen for the hospital. The objection to a kitchen at the top of the house is that everything must be carried up to it, but this is not very serious. All the coal required for the day can be sent up in a box on wheels at one trip of the elevator, and the empty box of the day before and the ashes can go down. A load of ice can go up for the day's use, and the difference between the raw and the cooked material would probably equal another trip of the elevator daily. This elevator, which is at the extreme northern end of the building, will work only at certain times in the day, and the rest of the time the steam will be turned off from it. The advantages of having a common kitchen at the top of the hospital are that the cooks can be under better observation, there is less giving away of food and leakage from the kitchen, (a not unimportant item), there is no smell of the cooking through the house, food for the servants can be sent directly down on the lift into the pantry of the servants' dining-room, while other food has only to be carried across the hall and sent down on the lift to the pantries of all the public wards, or to be carried along the upper hall to reach the lifts for the nurses' dining-room and the private patients' pantries. The doctors' dining-room is close to the kitchen. Thus food can reach the pantries without becoming chilled, and all the smell of cooked food will pass directly through ventilators in the roof of the third story. Close to the general kitchen is a diet kitchen for the nurses. Below ground, at the bottom of the kitchen

elevator, may be placed the coal vault for the range coal, and near by might be placed an ice-house to hold the year's supply of ice, and in this ice-house the meat might be kept.

BOILER HOUSE.

The boiler-house is very centrally located between the back part of the administration building and the servants' pavilion. It is sunk some ten feet below ground, so as to ensure a proper return flow by gravity from the radiators, and extends up about five feet above ground. For better light and ventilation, movable skylights are placed in the roof. In a deep pit in front of the boiler-house is the coal vault, from which the coal can be shoveled directly into the boilers. In the boiler-house is also a crematory for the burning of garbage and bandages. Connected with the boiler-house in the basement of the amphitheater is a room for machinery for electric lighting, or for any other purpose that may be desired; while on the other side of the boiler-house is the drying-room and laundry. From the boiler-house the large flue runs up close to the charity wards, surrounded by a roomy jacket for ventilation.

ISOLATING ROOMS.

Finally, on the top of the point of junction of the charity wards is placed a very small fourth story for the purpose of completely isolating suspicious and dangerous cases, with their nurses, from the rest of the hospital. On one side of the stairway leading to it are placed rooms for three cases of erysipelas, diphtheria or other contagious disease occurring within the hospital as a complication of other diseases, or for cases of suspected contagious disease. On the other side of the stairway are placed rooms for three cases of maniacal or suicidal delirium occurring within the hospital, or for the observation of cases of suspected insanity, or for the temporary accommodation of dangerous cases of insanity. These rooms are so arranged as to be under the eye of an attendant and completely shut off from the stairs and corridors. On each side are rooms for nurses and bath-rooms.

SOME DETAILS OF CONSTRUCTION.

The entire sub-basement and the outside of foundation walls should be cemented and covered with asphalt. There should

be an air space two or three feet high beneath the basement floor, in which may run the steam pipes and drains. The walls throughout the buildings should be smooth, of hard plaster and painted. The corners and angles should be everywhere rounded. There should be no baseboard, but the lower three inches of the wall should be of cement, not plaster, and should round out on the floor several inches. The floors should be of maple wood on iron beams, with fire-proof filling and deadening. The woodwork should be varnished, not painted. The windows extend up to the ceiling and down to within two feet from the floor. For convenience of washing them the "Rex windows" are desirable. In the winter double windows should be used. The floors of the water closets should be of slate or tile. The walls of the water closets should be of glazed brick, and most of the partitions in them should be of hammered glass nine feet high, and the solid walls should have glass windows in their upper part. All the waste pipes from the plumbing throughout the hospital, except those connected with the water closets, should have an air-break in the basement. The floor of the amphitheater, operating rooms and sterilizing-room should be tiled (preferably red octagonal tiles), the well of the amphitheater formed by a soapstone slab, and the amphitheater itself in its rising part should be made entirely of painted iron plates, the seats consisting of a wooden board screwed on to the iron, and the railing to lean on being a tube of gas pipe.

HEATING AND VENTILATION.

The hospital should be heated by hot water. The radiators may be placed at the lower part of the window spaces, and through an opening in the wall the outside air can enter in varying amounts and flow over the radiator. The air may be sucked out of the public wards and administration building through flues in the walls, and carried in galvanized iron boxes to the stack surrounding the flue from the boiler. This stack should be over a hundred feet high to cause good suction. An air-shaft with glass in it at points and on top runs down in the darker portion of the plumbing stacks and ventilates them. On the side of the public wards the air flows downward through this stack to the ventilating stack around the boiler

flue, but on the side of the private rooms air flows upwards in this stack in consequence of a coil of steam pipes in its upper part, and this stack ventilates also the private rooms. The fireplaces in the wards and rooms will also be a factor in the problem of ventilation.

CAPACITY OF THE HOSPITAL.

Eighteen hundred cubic feet of air has been allowed to each patient, except in the children's ward, where it is about half this quantity, and in some of the private rooms, where it is much more, often double this amount. Without the additional pavilion, which can at any time be added, there are accommodations in the hospital, as planned, for 187 patients and 106 attendants, grouped as follows:

21 female medical cases in the public ward.
21 male medical cases in the public ward.
23 female surgical cases in the public ward.
23 male surgical cases in the public ward.
15 obstetrical cases in the public ward.
9 children in public ward.
3 contagious isolating rooms.
3 maniacal isolating rooms.

118 charity cases.

42 patients in separate private rooms.
3 patients in private rooms for children.
12 patients in three four-bedded rooms.
12 patients in four three-bedded rooms.

69 private or paying patients.

45 bedrooms for nurses, including head nurse.
45 beds for female servants, including housekeeper.
10 bedrooms for male help.
6 bedrooms for doctors, apothecary and superintendent.

106 attendants.

DESCRIPTION OF THE PLATES.

Plate 1 represents the basement floor of the hospital. In the middle of the building is the large vestibule, with its three doors, giving access to the dispensary, the admitting rooms and the

hospital proper. The door to the left gives entrance to the office, and adjoining this is a room for patients to wait who desire to be admitted to the hospital, and beyond this a small examining-room, a dark room and a bath-room, in which dirty patients may be washed and given clean hospital clothes before being taken to the wards. Back of these is a hallway, and back of the hallway a staircase, by which ascent is made to the main floor. The door to the right of the vestibule is the entrance to the dispensary waiting-room, a large room connected by a lift with the apothecary's office above. Off from this waiting-room are water closets for men and women, also a bath-room, for medicated and other baths. In the basement of the eastern pavilion are the special dispensary rooms, some of which have dark rooms connected with them. The basement of the nurses' pavilion is divided up into store-rooms for trunks and general storage. Back of the elevator is a hallway, on one side of which is the machinery-room connected with the boiler, and on the other side is a mortuary chamber. Opening off it on opposite sides is a room for performing autopsies and a room where friends of patients may assemble for a burial service. The basement of the extreme western pavilion is divided up into bedrooms and a parlor for the male help. The southwestern pavilion contains rooms for the storage of the patients' clothing, of the ward furniture, and for other store-rooms, and also for a disinfecting-room and a water closet for the male help. In the disinfecting-room comes down a clothes chute from all the charity wards. In the basement of the servants' pavilion is the laundry, which is divided into two parts, a large drying-room closely connected with the boiler-house and with the flue for ventilation, and ironing-rooms and linen-rooms. At the extreme northern end of the building is a store-room for kitchen supplies. Back of it all are the servants' stairs and two lifts, one for coal and the other for food. Between the administration building and the servants' pavilion is the boiler-house and crematory.

Plate 2 represents the main floor of the hospital. In the middle of the administration building, in front of the elevator and stairway, is a lobby, to the east of which is a large parlor for the governors' meetings, beyond which is a small office for

the head of the training school or matron, near to the nurses' pavilion. On the other side of the front hall is a smaller parlor for the reception of visitors, then the office of the clerk, or the assistant superintendent, and finally the office of the superintendent. To the south of the staircase is the apothecary's office, and back of that his laboratory, and still further back rooms for chemical and microscopical examinations by the doctors. On the other side of the staircase is the central telephone station for the hospital, and back of this are the doctors' office and reading-room. There is also on this floor of the administration building a water closet for visitors and for the doctors. In the eastern pavilion on this floor are private rooms. There is also a private entrance and a small parlor. There is a separate water closet for the men and for the women, and also a separate water closet and slop sink for the nurses. The ventilating shaft can be seen ascending in the darkest portion of the plumbing stack. The two western pavilions show the medical and surgical wards, with the isolating-rooms, the examining-rooms, the water closets and the dining-room and pantry. The nurses' pavilion has on this floor a large dining-room with pantry, a large parlor, a large reading-room or study, a library and accommodations for the head nurse and the assistant head nurse, with separate bath-rooms. In the servants' pavilion on this floor is a dining-room with pantry, and a lift connecting the pantry with the kitchen, a sitting-room, a room and bedroom for the housekeeper, two small rooms for any small boys who may be employed about the hospital, and water closets for the female help. On this floor is a room for the sewing and the mending of linen. At the point of junction of the servants' pavilion with the administration building is the smokestack and ventilating flue from the boiler-house.

Plate 3 shows the second story of the hospital. Along the front of the administration building are the different bedrooms for the house staff and the parlor and bedrooms for the superintendent, with his special bath-room; that of the house staff being across the corridor. On each side of the staircase are recovery and etherizing rooms and a hall, which is open to the skylight above. Back of the staircase is the amphitheater, and on either side, behind this, are the special operating-rooms, the sterilizing-room, the nurses' and the doctors' toilet-rooms and

the cases for the instruments and supplies. All these can be clearly seen upon the plan. The two western pavilions and the eastern pavilion are the same as on the floor below. The nurses' pavilion on this floor consists entirely of bedrooms, and to each fourteen nurses are given two bathtubs and one spray bath. This plan represents two identical stories both in the nurses' and in the servants' pavilion.

Plate 4 represents the third story of the hospital. Back of the stairway is the top of the amphitheater, here showing the entire arrangement of the seats. On either side of the stairway is a room, one the apothecary's bedroom, the other the doctors' and the superintendent's dining-room. Along the front of the hospital are arranged the rooms for private patients. The eastern pavilion on this floor has a narrower hall; the rooms are all smaller, and at the end are three large four-bedded rooms for patients who pay a moderate sum. To the north of this pavilion is the nurses' pavilion, consisting, as on the floor below, of bedrooms. The extreme western pavilion is the obstetric ward, and at the end of this is the lying-in room; next to this three rooms for the patients to remain in for a week or so after confinement, and finally the recovery ward. These are all situated on the southern aspect of the building. On the north this pavilion is divided into smaller wards, where the patients awaiting confinement can be kept. The southwestern pavilion contains the children's ward; then some small rooms for mothers with children, finally four three-bedded rooms for patients who can afford to pay but little. There is also an isolating-room on this floor. This floor in the servants' pavilion consists mainly of a diet kitchen and the general kitchen of the hospital, together with such store-rooms as may be necessary. Opposite the kitchen is a serving-room, from which food can be sent down on the elevators to all the pantries of the charity wards, which are immediately below. There are two doors to the kitchen department, one an exit by which the food is brought out, the other an entrance by which all soiled dishes are brought back to the wash-rooms.

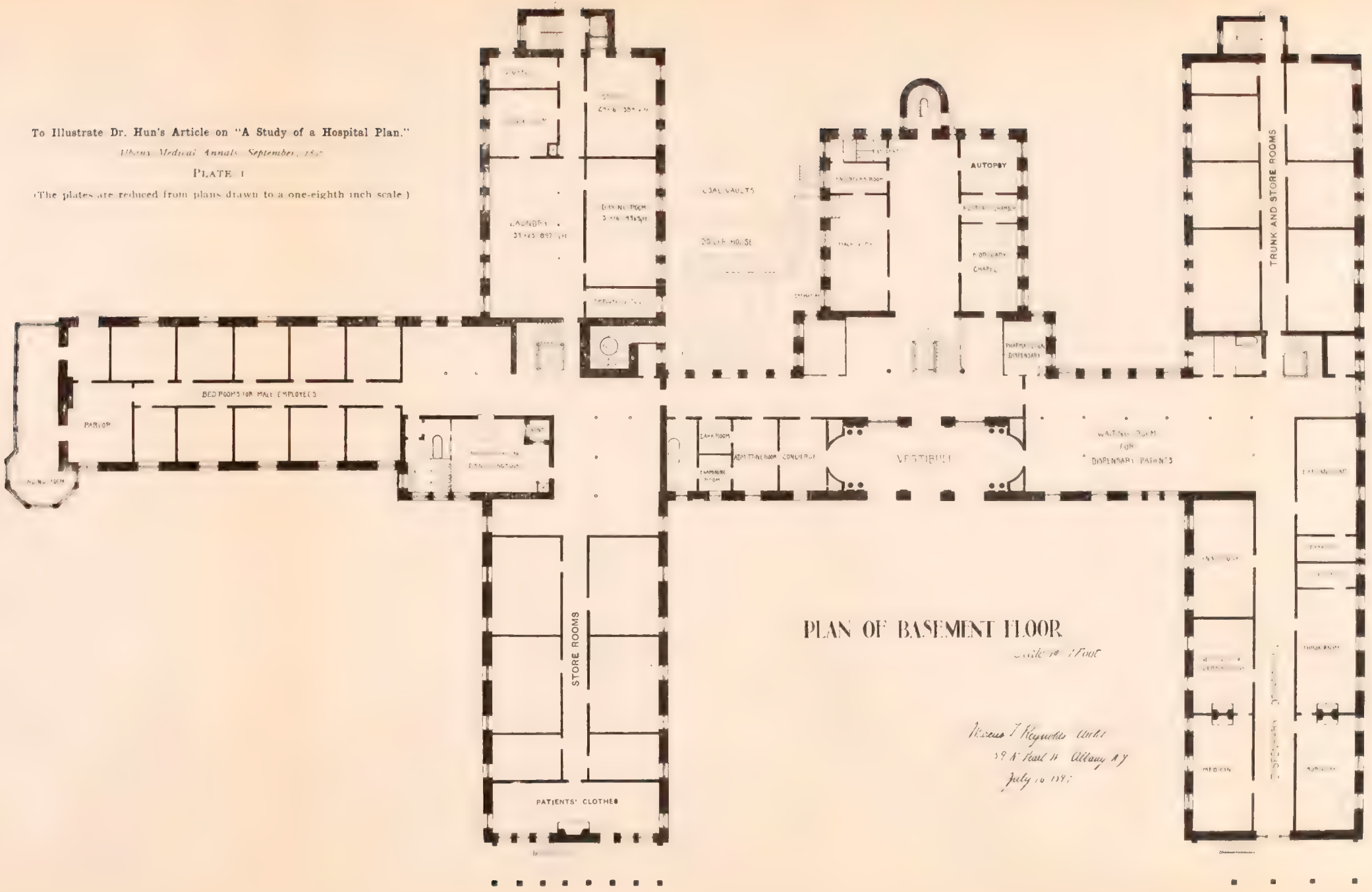
A separate staircase leads to a fourth story, placed at the intersection of the pavilions. Opening from the well-lighted hall is a room where an attendant may keep watch over the rooms

To Illustrate Dr. Hun's Article on "A Study of a Hospital Plan."

Albany Medical Annals September, 1887

PLATE I

(The plates are reduced from plans drawn to a one-eighth inch scale.)



PLAN OF BASEMENT FLOOR

Scale 1/8 inch

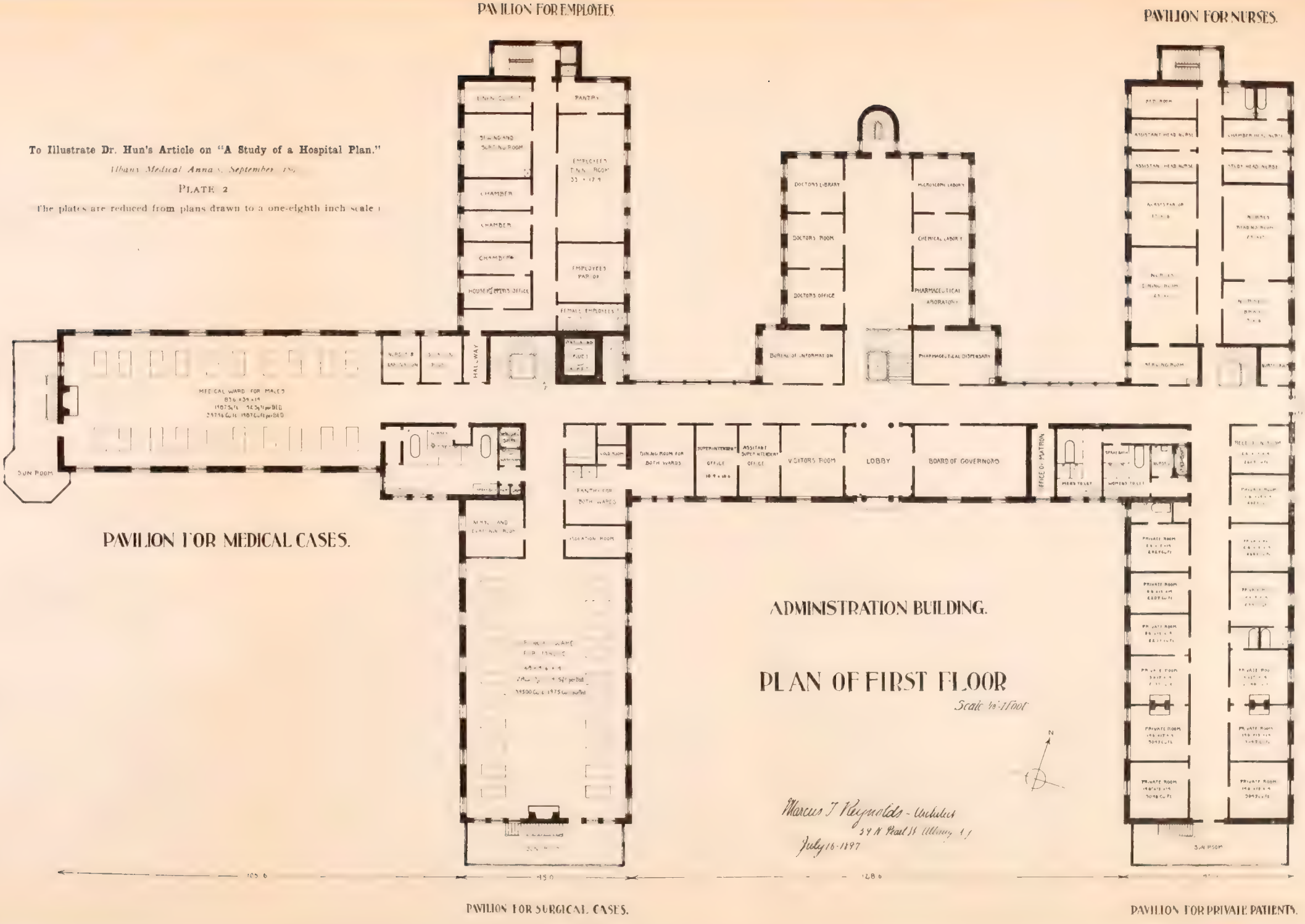
Nicholas J. Reynolds Archt
39 N. Pearl St. Albany N.Y.
July 16 1887

To Illustrate Dr. Hun's Article on "A Study of a Hospital Plan."

Albany Medical Annals, September 1897

PLATE 2

The plates are reduced from plans drawn to a one-eighth inch scale.

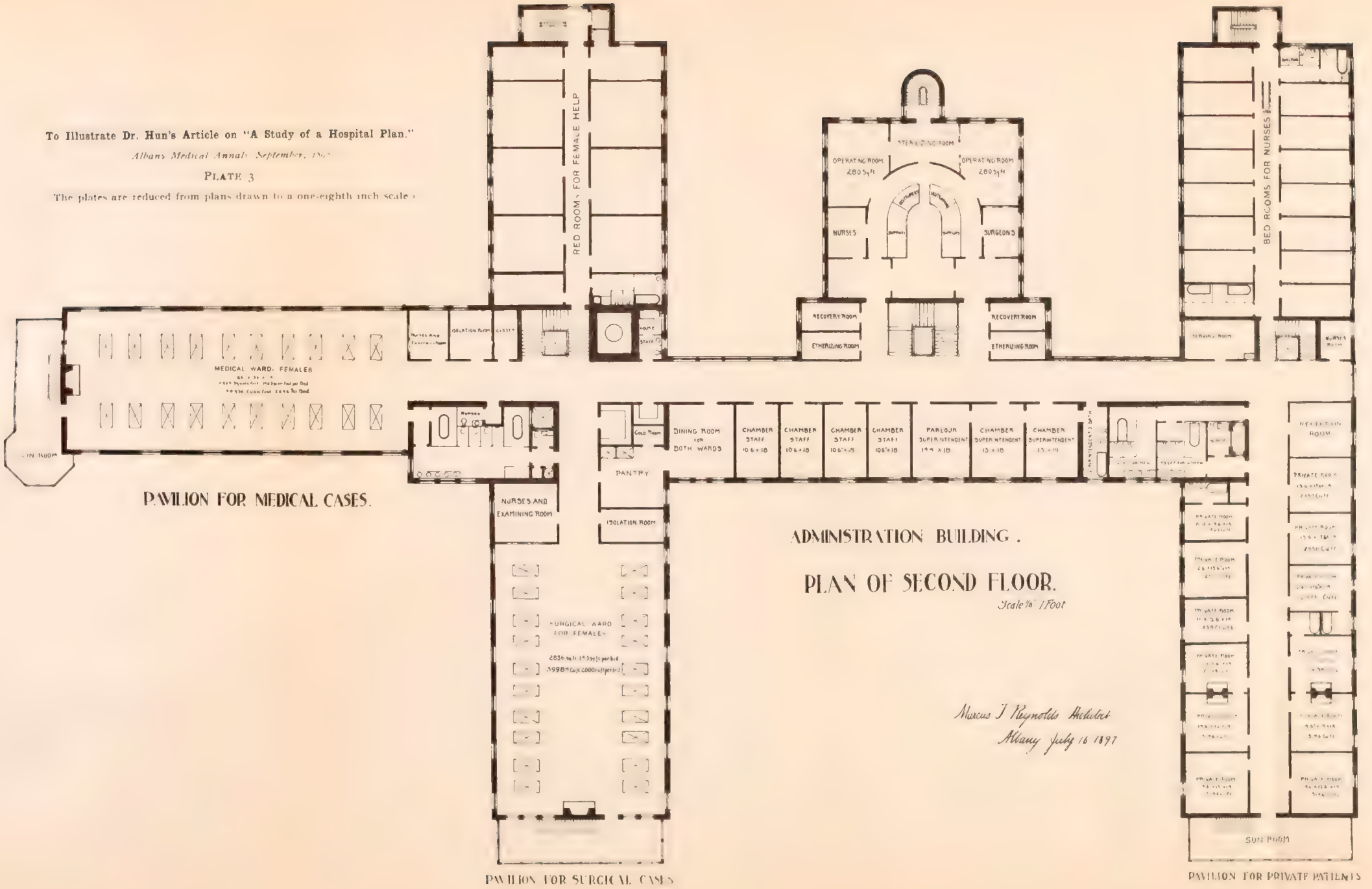


To Illustrate Dr. Hun's Article on "A Study of a Hospital Plan."

Albany Medical Annals September, 1897

PLATE 3

The plates are reduced from plans drawn to a one-eighth inch scale

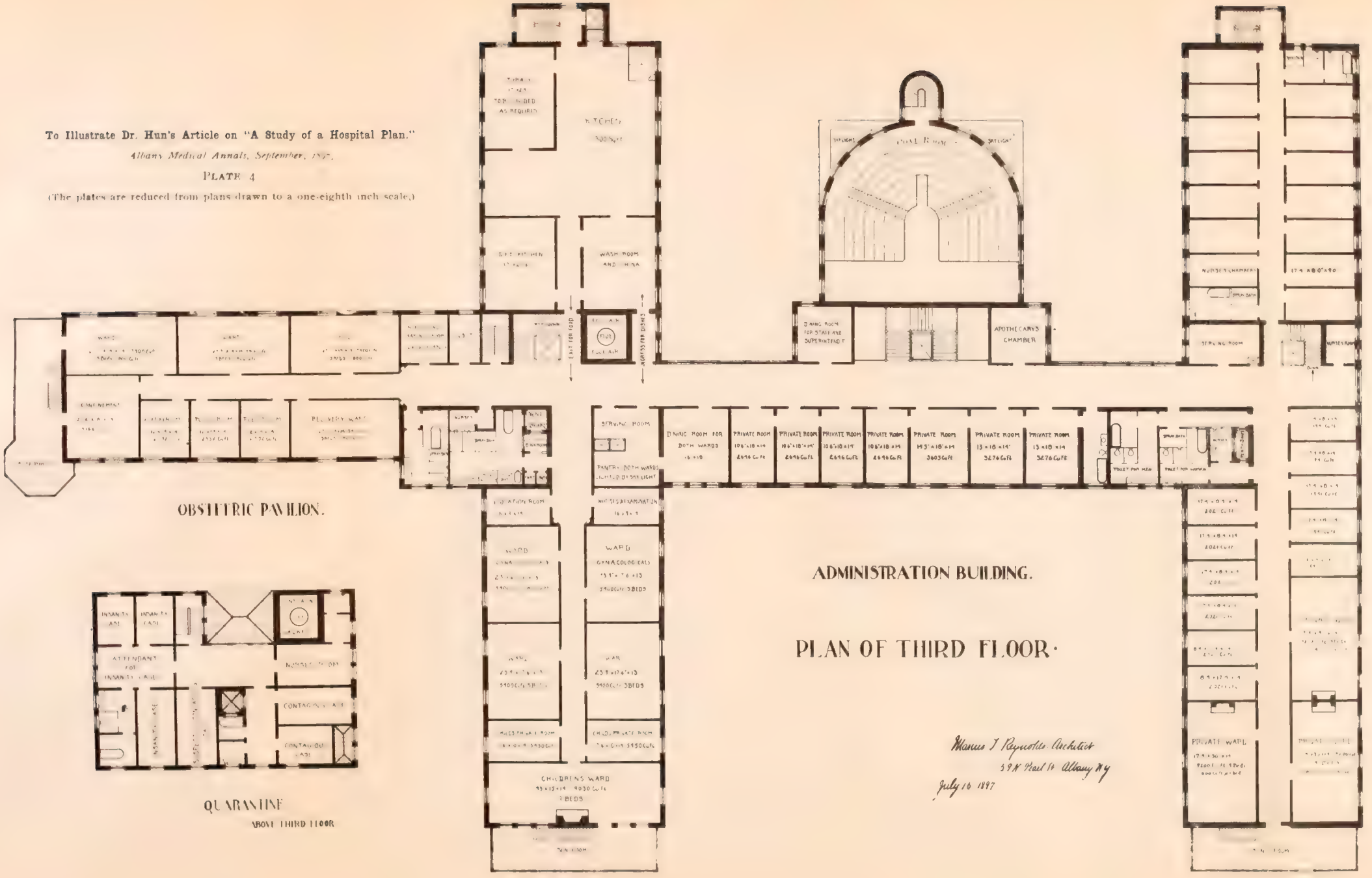


To Illustrate Dr. Hun's Article on "A Study of a Hospital Plan."

Albany Medical Annals, September, 1897.

PLATE 4

(The plates are reduced from plans drawn to a one-eighth inch scale.)



OBSTETRIC PAVILION.

ADMINISTRATION BUILDING.

PLAN OF THIRD FLOOR.

QUARANTINE

ABOVE THIRD FLOOR

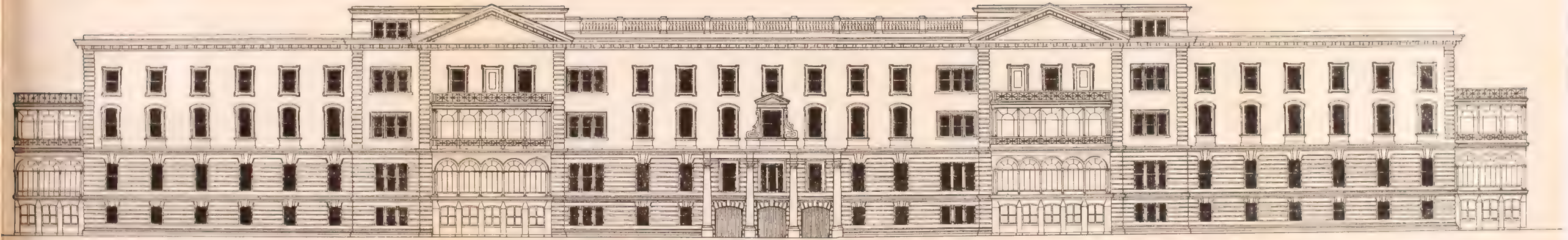
Marcus T. Reynolds Architect
59 N. Pearl St. Albany N.Y.
July 10 1897

To Illustrate Dr. Hun's Article on "A Study of a Hospital Plan."

Albany Medical Annals, September 18

PLATE 5

(The plate are reduced from plans drawn to a one eighth inch scale



Marcus T. Reynolds - Architect
Albany N. Y.

for insane patients, which open off of it. There are also three rooms for contagious cases, and these open on a separate corridor.

Plate 5 represents the main façade, in which an additional wing to the east has been shown, although it is not proposed to erect this with the first construction.

NOTES TAKEN FROM THE CLINICAL LECTURES OF DR. JAMES GREGORY, OF EDINBURGH, IN 1787.

(Edited, with Introductory Note, by Dr. G. ALDER BLUMER, Utica State Hospital. Continued from the ANNALS of July and August, 1897.)

John Clark.

This patient gave a long account of his Complaints. His intellectual powers were much impaired. He had scrophulous tumors in his groins, which had terminated in suppuration. The scrofulous affection had been mistakened for Lues, for which he took Mercury. It was however more than probable that he had some syphilitic affection, as scrophula with suppuration of the inguinal Glands has never once occurred either to Dr. Cullen or Dr. Gry. The quantity of mercury which he seems to have taken has been very considerable, & his complaints have been much aggravated by after exposure to Cold.

Lues is always more difficult to cure in scrofulous habits than in others: nor can they so well bear the administration of mercury.

Our patient complained of pain in his breast, which probably arose from the scrofula affecting his lungs, and forming tubercles in them. Has cough, & vomiting, cold Shiverings & morning sweats: also complains of violent headach, want of appetite & Pyrosis. To these Complaints seem united some organic œlsion of the head. Upon inspecting his throat the uvula & tonsils appeared to be a little inflamed & swelled — whence when the bark was ordered him, the difficulty of swallowing caused a disagreeable taste, which disagreeing with his Stomach, he threw the Bark up through his nose.

An *astringent gargarium* was used, which medicine sometimes alone removes inflammatory sore throats. He then was ordered a tonic in form of a *bolus* rolled up in a wafer that he might not taste it, but it was rejected from the stomach.

Having a difficulty in discharging his urine the *Catheter* was ordered. This ought always to be done, for there are many instances of people losing the power of contracting the bladder, merely from accidental retention. There had in him come on such a state of paralysis & debility, that the urine would not flow upon the introduction of the Catheter without pressure upon the abdomen. — There was probably something more than the want of vis vitæ, which occasioned the stupor &c., & probably there was a collection of water in the ventricles of the brain.

There is a remarkable connection between the scrofulous habit & the hydrocephalus. I have attended to the dissection of several Hydrocephalous patients, & have commonly found excrescences in the brain, forming tumors as large as my finger, or a pullet's egg, which tumours I believe were scrofulous.

Although this patient had suffered so much from the use of mercury, it was however found necessary to renew it, as it has been often found one of the most successful remedies in Hydrocephalus. We have the testimony of so many that we must suppose it has some effect. The Doctr. never saw it cure a disease of this kind when very far advanced, tho' he makes no doubt if it be taken early it may often prove very useful. It is very difficult to make the mouth affected on account of the stupor & insensibility of the patient. I have pursued the use of it in some cases without its having much effect.

Where any scrofulous tumours are in the brain, neither mercury nor any other medicine with which we are acquainted, can have any good Effect.

The *Vapour Bath* has been used in this disease with seeming good effects, but our Patient's strength would not permit our trying it.

In the administration of mercury it should be thrown in, in as great quantity as possible.

We have now learnt that the appearances in the groin of our patient arose from Buboes; & that he had venereal Complaints two years ago. There can be no doubt in this case that the lues gave occasion to their appearance.

Our patient's family are also much affected with scrophulous complaints.

Clinical and Pathological Notes.

Two Cases of Sinus Thrombosis. — Thromboses of the cerebral sinuses were formerly classed as anatomical curiosities, and only during the present century have their practical importance and clinical significance been fully recognized. The cerebral sinuses are especially liable to thrombosis on account of their roominess, slowness of blood current, tortuosity and freeness of anastomosis. Necessarily vague as are the symptoms, the history of every case verified by an autopsy will be of value. The following cases occurred at the St. Lawrence State Hospital:

I. Sarah G., aet. 41, housewife by occupation, was admitted to the hospital in November, 1894, with acute mania. This attack began about two weeks before admission, and was said to be due to the sudden death of her son. In December patient became exhilarated, laughing and talking immodestly and disconnectedly. Early in February she was quiet and depressed, but soon became excited and violent. In March she remained in bed. She was very noisy and untidy, and destroyed clothing. After this period of excitement she again became oppressed and refused nourishment. On May 30 she was quite prostrated and debilitated. For three or four days previous she had been suffering from a severe diarrhœa, with stools saturated with blood, very offensive, but containing no mucus or pus. Her right leg was found to be cold, pale, helpless and paralyzed, with some cyanotic discoloration. Patient was too confused to give intelligent replies to questions, but there appeared to be a hyperæsthetic zone around calf, with complete anæsthesia below, and no reflex. Heart was weak, but no murmur was detected. Pulse very weak. Temperature varied from 99° to 101°. Urine contained albumin, but no casts. On May 31st patient rallied somewhat, and at seven o'clock took some nourishment, but at half-past seven there was a sudden change in her condition. The circulation in extremities (arms and legs) disappeared at once; heart beat could not be palpated; pupils were dilated; and the skin became sallow and livid. Patient had gasping respiration, and died shortly without coma or convulsion.

Autopsy. — The skull was thick and solid. The dura presented slight adhesions anteriorly, but these were easily broken. The brain was removed, leaving the dura in place. As the dura tore away from the Pacchionian region, several thready thrombi, with recent coagulum, were drawn from the larger veins of the vertex. Incision of the superior longitudinal sinus showed a finely organized tough thrombus, pale yellow in color, intermingled with the trabeculæ of the lining coat of the sinus, and extending for about two inches throughout its length. The thrombus consisted of a fairly large head anteriorly, and gradually tapered posteriorly, its greatest diameter being only about one-quarter of an inch. The other sinuses posteriorly were filled with fresh blood, and recent coagulum and showed no organized clotting. This was especially marked in the dependent parts. The veins of the vertex were greatly distended, especially those on either side, showing the ramifications of the large thrombus. The arteries at the base were distended with blood, and in the trunk of the left Sylvian was a small, insignificant, fibrous formation about a sixth of an inch in diameter. No clots were found in the arteries except post-mortem coagula. All of the vessels of the pia were injected, but the pia itself was not noticeably thickened, and there were no adhesions to the vertex. The brain itself was unusually firm and hard, but showed no local lesions beyond those mentioned.

The heart was of average size, and its structure was firm. The valves were delicate and free from lesions of any sort.

The lungs were distended, and did not collapse on removal of breast-plate. There were no pleural adhesions.

The liver was pale and softened, and gave some indications of fatty change. The kidneys were firm. There were some slight adhesions of the capsule, and on section there was a slight increase of connective tissue. The pyramids were paler than normal, and the cortex was somewhat thickened. The small intestine was markedly inflamed, its greater length being bright red and attenuated. About eighteen inches from the ileo-cæcal region the bowel was gangrenous, of a deep blackish-green color, and very soft. No ulcerations were discovered upon the lining membrane. This condition was undoubtedly

due to thrombus in one of the mesenteric vessels. The popliteal vessels of the right leg were removed, and in the artery near its bifurcation was found a reddish-yellow thrombus, fairly firm in consistence, completely occluding the vessel and extending for about two inches into it.

II. Jennie H., aet. 27, domestic, was admitted to the hospital June 7, 1895, with the fifth recurring attack of acute insanity. An interesting and perhaps instructive point in connection with this case was that during her fourth attack, one year previous, the treatment was by thyroid extract, and in May, 1895, a month before present admission, symptoms of Graves' disease became manifest. On admission she was very nervous; body well developed and in good nutrition; thyroid gland noticeably enlarged bilaterally, pushing other tissues out of place; the enlargement seemed larger on right side. Over thyroid a loud, purring bruit was heard. Eyes were prominent; eyeballs moved freely in all directions, and eyelids did not readily follow; angle of aperture of lids increased; pulse 130, regular, low tension; heart rapid, regular, strong impulse, no murmur; urine negative. She was given tincture of belladonna, two minims, thrice daily, which was gradually increased to seven. Patient seemed to improve under this treatment, and exophthalmus was less prominent. In August patient was quiet and steady. Early in September she became dull and stolid, and appeared distracted; answered questions very slowly and after prolonged hesitation. Her appetite became poor, and sleep was deficient. She stood about in one position. On September 17th she was very weak and refused food and medicine. Dulness continued, with paroxysms of restlessness and excitement. Pulse almost imperceptible and very weak. On September 18th the patient lay in a stupor all day, holding mouth tightly closed when food or medicine was placed at lips, until late in the afternoon, when some relaxation was noticed. Arms became cold and pulse failed. Respiration gasping and of Cheyne-Stokes character. Patient did not arouse, and died at 9:55 P. M.

Autopsy. — Body well nourished. Rigor mortis. Hypostasis well marked, extending upon shoulder and toward face. Exophthalmus, enlarged thyroid. The skull was thick and some-

what irregular. The parietal bones were prominent and thickened, and between them was a depression of the sagittal suture, covered by a dense area of connective tissue, making firm attachment to the scalp. The dura was not adherent. On incision of the superior longitudinal sinus there appeared a long, firm, cream-colored thrombus about four inches in length and one-eighth in thickness, with ramifications into the veins leading into the sinus. The walls of the sinus were not inflamed. Upon different parts of this thrombus were deposited recent red clots. The veins of the pia along the convexity were engorged with blood and distended and twisted, the injection being extreme and the vertical areas congested. The pia was thus waterlogged by excess of blood and serum. It stripped readily from the brain. The dura contained a small lime plate. The brain was softened, and the hemispheres fell easily apart by their own weight. No focal lesions were noted beyond those described.

The heart was enlarged. The muscular substance was soft, and the walls of the right ventricle were attenuated. In the right ventricle, closely adherent to its walls, extending into the auricle and infundibulum, was an organized thrombus, with irregularly projecting excrescences, upon which were points of red coagulum, the whole being intermingled and matted with a yellow fat clot. In the left ventricle was also an abundant deposit of yellow clot. The segments of the mitral valve were unequal, one flap extending fully an inch into the ventricle, the other appearing as a mere fringe at the edge of the orifice. All valves appeared competent.

In these cases the appearance of the thrombus, its adherence to the walls of the sinus, and the distension of the veins leading into it, make it highly improbable the thrombus was formed before death. In neither case were the walls of the sinus inflamed, nor did they show any evidence of phlebitis. This is the condition found in cases of marantic thrombosis. The situation of the thrombi agree with the statement of Gowers, that the seat of primary thrombosis is almost invariably the superior longitudinal sinus.

The occurrence of thrombi in other parts of the body, as

occurred in both cases, points to an altered condition of the blood.

There was nothing characteristic about the symptoms except their vagueness. In both cases there was marked feebleness of the heart and pulse for some days before death, which consequently greatly enfeebled the blood current.

Complete exhaustion, without coma or convulsion, marked the end of one case, and coma with Cheyne-Stokes respiration the other. None of the external symptoms of the text-books, such as œdema of forehead, epistaxis, etc., were observed.

The diagnosis of such cases is almost impossible until after death. The cerebral sinuses from their position are easily overlooked, and it would be well as a matter of routine to examine at least the superior longitudinal sinus at every autopsy.

H. L. K. SHAW.

Correspondence.

THE TREATMENT OF TAPEWORM.

CHARLTON, N. Y., *August* 16, 1897.

To the Editors of the Albany Medical Annals:

In the August ANNALS Dr. J. S. Bird's article on tapeworm and treatment by Merck's preparation of male fern corresponds with my experience. I will relate briefly results in two cases: Mr. and Mrs. H. W. V., each aged about 40, expelled sections of pork worm. They tried various remedies, proprietary and otherwise, without success, excepting to expel portions of the worm. Last summer Mr. V. called on me and asked if I could rid him and his wife of their unpleasant inhabitants. I told him I thought I could. I gave him four drachms of Merck's oleoresin of male fern, and directed diet for 24 hours of milk, and total abstinence from food for the next 12 hours; then to empty the intestinal canal with castor oil. After this each patient was directed to take one drachm of the male fern and keep quiet and await results. The patients followed the advice very well, and in less than 24 hours both were relieved of the worms, head and all. There has been no return of any trouble since. Believing this preparation of Merck's to be A1, I write to indorse Dr. Bird's article.

F. W. ST. JOHN, M. D.

Editorials.

Voluntary Admissions to Institutions for the Insane.

The ANNALS of May last directed attention to the need of provision for patients in the incipient stages of insanity, and suggested that some arrangement be made for the admission to institutions for the insane of patients who could not be certified as insane, but who voluntarily sought relief from symptoms threatening insanity. The New York State Commission in Lunacy took the matter into consideration, and obtained from the Attorney-General of the State an opinion upon the subject, from which the following is quoted:

"There is nothing in the Insanity Law, nor in any other, so far as I have discovered, that prevents the owners and managers of such a private institution from carrying on, in connection therewith, a hospital or place for the treatment of those persons who have voluntarily subjected themselves to treatment therein. The term 'custody' as used in section 6 of the act, means detention by legal process and has reference to persons who have been adjudged insane. That term can have no application to a person who is not insane and who voluntarily seeks the care and treatment of physicians expert in mental diseases. As to such persons I am of the opinion that the State Commission in Lunacy is not clothed with any authority of supervision or control, nor vested with visitorial power and duty."

In view of this opinion, the Commission in Lunacy has rescinded all rules heretofore promulgated in relation to the reception of voluntary patients in private institutions, holding that patients classed as "voluntary" are those "whose liberty is not restricted, who are not insane within the meaning of the statute, and who voluntarily remain under care and treatment." Several private hospitals have signified their willingness to receive cases of neurasthenia, and of the alcohol or drug habit, who are not insane, but are willing to sign a request for admission and to conform to the regulations of the hospital.

The invalid public is to be congratulated upon this liberal interpretation of the functions of private hospitals, who thus open their doors to a large class of patients greatly in need of the resources of specially equipped institutions.

Pregnancy Following Ventrofixation of the Uterus.

In the *New York Medical Journal* of August 14th, Dr. Newman reports two cases of successful and normal labor following this operation, and summarizes again the results reported a year ago by Dr. Noble. In Dr. Newman's cases there were some threatening and more or less unpleasant symptoms during the first few weeks of pregnancy, but by care any disastrous results were averted, and the patients passed the latter half of gestation without any difficulty. Dr. Newman concludes that (1) women subjected to this operation are less apt to become pregnant (only fifty-six out of eight hundred and eight cases reported by Dr. Noble); (2) pregnancy and labor are uncomplicated as a rule; (3) serious or insuperable obstruction to labor may be produced if the fundus and anterior wall of the uterus are imprisoned below the point of attachment between the uterus and abdominal wall; (4) it does not cause abortion, and, at last, patients are perfectly well after confinement, with a uterus in normal position.

State Medicine.

EDITED BY HARRY SEYMOUR PEARSE, M. D.

National Confederation of Examining Boards. — At the seventh annual meeting of this confederation, held in Philadelphia, May 31st, '97, the president, Dr. W. W. Potter, of New York State, selected as the title of his address "Reciprocity in Medical Licensure; A Plea for Interstate Indorsement."

The essential elements of his address should be of special interest to every practitioner and student of medicine in the United States. They point out clearly the lines upon which a great advance can be made in the standards of the profession. This advancement is not confined to the boundaries of a few individual States, but to the limits of the entire country, and is to be accomplished by an interstate exchange of licenses.

First. He denies that any disagreement exists between college faculties and the State examining boards.

Second. He trusts that the time is not far off when we may have a national registration bureau, where every legally qualified reputable physician may be recorded, and when all physicians whose names appear upon this register, and whose licenses are

properly indorsed by the registrar, may pass from one State to another in the practice of their profession.

Third. There is but one basis upon which reciprocity between the several States can be established. This implies equalization of the preliminary requirements of medical students; a uniform period of collegiate training, with uniform methods; and absolute similarity in the methods of conducting State examinations and granting licenses.

Fourth. It only remains for those States now demanding separate examinations for license to practice to bring their preliminary requirements to a common level by statutory enactments, and then for their several examining boards to agree upon uniformity of methods, when the question of reciprocity is solved.

Considerable time and work will be required before these improvements can be realized. When they are, however, the practitioner and the student will be happier, and justice will feel easier.

The student can feel that his field of future work is limited only by the boundaries of his country, and not by those of any one State, and the practitioner can know that, if he is compelled to move from one State to another, he will not be required to spend considerable time and money to meet the requirements of another limited territory.

If reciprocity, with a national Board of Registry, were established, aside from the advancement of the standards of the profession that it would assure, it would increase the popularity of State examinations among practitioners and students, who would not then consider them a restriction upon their life work, as many do at present.

The Health Board of Albany. — The Albany Board of Health has issued the following circular of information for consumptives and those having the care of them: Consumption is a dangerous, infectious, communicable disease, and can be largely prevented by simple and easy means of cleanliness on the part of those afflicted, and those having the care of them. It is transmitted, in the vast majority of cases, from the sick to the healthy by means of the spittle or expectoration of those afflicted with the disease. It should be remembered that the dangerous element is the expectoration of the consumptive, and that if this is carefully col-

lected and destroyed before it becomes dry, little danger is to be feared.

The expectoration should be received, if the patient is confined to the house, into cups containing carbolic acid (one part of the acid to twenty parts of water); or, if the patient is up and about, on pieces of cloth, which should be saved and burned by the first opportunity. This precaution is as necessary for the consumptive as for those about him, as many cases would get well if they would avoid re-infecting themselves.

Consumptives should not spit on the sidewalks or in public conveyances, or in places of public congregation. Cases of consumption should be reported to the Health Department, not with a view of quarantining or otherwise interfering with them, but that the department may place in their hands simple instructions to prevent their communicating the disease to those around them, and to assist in their own recovery.

Apartments which have been occupied by consumptives should not be occupied by others until they have been renovated. They should be cleaned, scrubbed, whitewashed, papered or painted, as the case may be, before they are again occupied.

Bedding, carpets, rugs and clothing used by consumptives should be disinfected, preferably by the Health Department.

Medical News.

AN ARMY MEDICAL BOARD will be in session at Washington, City, D. C., during October, 1897, for the examination of candidates for appointment to the Medical Corps of the United States Army, to fill existing vacancies.

Persons desiring to present themselves for examination by the board will make application to the Secretary of War, before September 1, 1897, for the necessary invitation, giving the date and place of birth, the place and State of permanent residence, the fact of American citizenship, the name of the medical college from which they were graduated, and a record of service in hospital, if any, from the authorities thereof. The application should be accompanied by certificates based on personal acquaintance, from at least two reputable persons, as to his citizenship, character and habits. The candidate must be between 22 and 29 years of age, and a graduate from a regular

medical college, as evidence of which his diploma must be submitted to the board.

Successful candidates at the coming examination will be given a course of instruction at the next session of the Army Medical School, beginning November 1, 1897. Further information regarding the examinations may be obtained by addressing the Surgeon-General, U. S. Army, Washington, D. C. GEO. M. STERNBERG, *Surgeon-General, U. S. Army.*

STUDY OF THE AMERICAN MEDICINAL FLORA. — The subcommission of the Pan-American Medical Congress appointed to study the medicinal plants of the United States has entered into an association with the Smithsonian Institution for that purpose. The principal points of study are as follows:

1. Local names.
2. Local uses, together with historical facts.
3. Geographical distribution and degree of abundance in the wild state.
4. Is the plant collected for market? And if so,
   (*a*) At what season of the year?
   (*b*) To how great an extent?
   (*c*) How prepared for market?
   (*d*) What is the effect of such collection upon the wild supply?
   (*e*) What price does it bring?
   (*f*) Is the industry profitable?
5. Is the plant, or has it ever been, cultivated, and if so, give all information on the subject, particularly as to whether such supplies are of superior quality, and whether the industry has proved profitable?
6. If not cultivated, present facts concerning the life history of the plant which might aid in determining methods of cultivation.
7. Is the drug subjected to substitution or adulteration, and if so, give information as to the plants used for this purpose?

While it is not expected that many persons will be able to contribute information on all these points concerning any plant, it is hoped that a large number of persons will be willing to communicate such partial knowledge as they possess to H. H. Rusby, M. D., Chairman of the General Commission, New York College of Pharmacy.

MISSISSIPPI VALLEY MEDICAL ASSOCIATION. — The next meeting of the Mississippi Valley Medical Association will be held in Louisville, on October 5, 6, 7, and 8, 1897. All railroads will offer reduced rates. The president, Dr. Thos. Hunt Stucky, and the chairman of the Committee of Arrangements, Dr. H. Horace Grant, promise that the meeting will be the most successful in the history of the association, and this promise is warranted by the well known hospitality of Louisville and Kentucky doctors. Titles of papers should be sent to the secretary, Dr. H. W. Loeb, 3559 Olive street, St. Louis.

Obituary.

WILLIAM C. WEY, M. D.

The Albany Medical College has been fortunate in most of its graduates, and none has she found more worthy of a maternal pride than him whose name heads this. Spending all his professional life in a small interior city, he has won a national reputation, not alone by his professional work, but by the larger qualities of mind and heart which have made him a leader in professional councils, in guiding the fortunes of the medical craft, and in being a good citizen. He was a leading mind in his profession and community, and the importance of his long life to his entire environment can hardly be overestimated. For nearly fifty years he has been one of the first citizens of Elmira, one of the first physicians of the State of New York, a man whose philanthropy of heart made him a zealous advocate of every good to man in whatever relation he stood, and one whose geniality, loving nature, wisdom in varied ways, made the word of his departure from us come with a sense of personal loss to a larger circle of those who esteemed him a friend than falls to the lot of many.

He graduated at the Albany Medical College in 1849, being then just 20 years of age, one of the brightest students of the class. The same year he entered upon general practice in Elmira, and continued a general practitioner for forty-eight years, winning of necessity an important range of work. An interesting letter, dated January, 1849, in the handwriting of Dr. Alden March, has been placed in our hands, which is a testimonial of Dr. Wey's assiduous devotion to his work as a student in his office and in the college, and concluding with the statement:

"I regard the doctor as possessed of talents of a superior order, and I do most cheerfully recommend him to an enlightened public as being worthy of confidence and patronage." This letter from his eminent preceptor he always preserved.

He was president of the State Medical Society in 1871, and while he carried the honors with distinction, his larger work was as a private member, present at every meeting save the last one, which his failing health kept him from, ready with wise counsel in professional discussion or in shaping the society's policy.

Dr. Wey was also, as all good practitioners are, a loyal member of his local societies, being one of the founders, in 1852, of the Elmira Academy of Medicine. He was an active member, and for thirty years a vestryman, of Trinity Church. He held many offices of local or State importance, among which was that of president of the Board of Commissioners of the Elmira Reformatory, nor did he despise the humbler position of health officer, which his city was fortunate in his holding. He brought to all the service of his ardent, intelligent capacity. He was one of the most distinguished physicians of the State, one of the most genial, companionable men, one of the most untiring, loyal citizens — in all ways a good man, who brought honor to all with which he was connected, whose association we have prized, and whose memory we will preserve.

He died June 30, 1897, aged 68. F. C. C.

HENRY NILES JOHNSON, M. D.

Dr. Johnson died at his home in Coeymans on the morning of July 12th, 1897, after an illness of a few days' duration. He was born in 1852, and graduated from Rutgers College in 1876. After his graduation he began the study of medicine with the late F. G. Mosher, M. D., and received his diploma from the Albany Medical College in 1881. Dr. Johnson carried on the drug business in connection with his profession. He was a member and officer of Onesquethau Lodge, No. 804, F. & A. M., having filled the responsible position of treasurer since its organization. He was also a member of Irving Lodge, No. 254, K. of P.; treasurer of the R. & R. Engine Company, and examining physician of the Workingmen's Protective Union. With health never vigorous, he had become somewhat exhausted by steady continuance in the duties of his profession,

and although confined to the house for nearly seven days, his friends were scarcely made aware of his illness before the sad intelligence of his death was announced.

Dr. Johnson was a man of honor and strict integrity. Truthfulness in all relations and conscientiousness were in him marked features. As a physician he was ever ready to respond with cheerfulness to all demands made upon his professional skill. The sick, whether in homes of plenty or want, received from him patient care and faithful service. He befriended the unfortunate in the liberal spirit of the Samaritan. Of modest and agreeable demeanor, his presence was ever welcome in the sick-room, and the success of his ministrations is attested by a multitude of sorrowing patients.

CORNELIUS A. GROOT, M. D.

Dr. Groot died suddenly August 6, 1897, at his home in Auburn, aged 60 years. When the war broke out he was a student in the Albany Medical College. In 1863 he was sent as medical cadet to the United States hospital at Mound City, Ill. In 1864 he returned to college, graduated, and was appointed assistant surgeon in the army, in which position he served to the close of the war. He was in the active practice of medicine from the close of the war until within the past two years.

Book Reviews.

A Reference Book of Practical Therapeutics, by Various Authors. Edited by FRANK P. FOSTER, M. D. Being the second volume of a two-volume work. 800, 618 pages. Publishers: D. Appleton & Co., New York. 1897.

This book completes a work, the first volume of which was produced in November, 1896, and in every detail should command the approbation of the practitioner and student.

At the present day there is no branch of medicine in which more rapid and decided advances are made, and the writer of a work on therapeutics must be abreast with the times to receive any recognition. The editor has succeeded in making his book thoroughly up to date; not only this, he has embodied in it the fundamental principles of therapeutic application in a way that will render it valuable for an indefinite period.

Monographs are quoted freely; special investigations in biology and therapeutics, with their deductions, and all the available knowledge of the preparation and action of the agents are comprehensively given.

One of the most valuable parts of the work is the large amount of subject-matter given to the recent innovations of the therapeutic field.

Seven pages are devoted to the nucleins, twenty-six to serum and serum therapy, thirteen to thyroid treatment, and six to the toxins. In the section on the nucleins, after stating that the nuclein compounds are not of recent discovery, having been studied chemically in 1831 by Braconnot, and giving a brief history of the development of the proteid, it says: "Chemically the nucleins are complex proteid bodies characterized especially by the large amount of phosphorus they contain;" that, generally speaking, they are insoluble in dilute acids and soluble in dilute alkalies, resisting peptic digestion. They may be obtained from yeast, casein, the nuclei of blood and pus corpuscles, liver, spleen, bone marrow, thyroid and thymus gland, testicles, or any organ containing numerous cell elements. The investigations of Hammerstein, Crittenden, Vaughn and others are quoted, especially those of the latter, which are very extensive. Nuclein therapy is considered as yet in the experimental stage, Vaughn having worked with it in diphtheria, tuberculosis and indolent ulcers, and in relation to its germicidal value, and the prevention of disease by its use. "Many of the results alleged to have been obtained from the use of nucleins have not come to us surrounded with sufficiently accurate and scientific observations to enable us to accept them unqualifiedly — experience and common sense teach us to wait, watch and observe practical results."

The article on serum and serum therapy is exhaustive and valuable. Of serum it says: "This constituent of the blood seems, even in its normal condition — that is to say, when its constitution has not been modified by the action of any toxin — to be possessed of an antitoxic power, and probably this assists in the prophylactic and curative action of the antitoxin treatment." Results of experiments with horse and cow serum in tuberculosis and cholera infantum are shown. The use of artificial serum is well put forth with the views of such men as Mengus, Pozzi and Bassi. With regard to serum therapy: "Immense labor has been expended in isolating various toxins, but the present results are very unsatisfactory. Hardly anything has been ascertained in regard to antitoxins, except that they exist." Then follows a concise statement of the theory of serum therapy, an explanation of immunization and the methods of producing it in animals and human beings. The results of the work of various pathologists with the antitoxins are illustrated at considerable length, giving the reader a clear idea of the present standing of serum therapeusis in diphtheria, tetanus, septicemia, erysipelas, ulcerative endocarditis, the exanthemata, lupus, cancer, Asiatic cholera, typhoid, snakebite, anthrax, pneumonia, the plague and tuberculosis. With reference to the bubonic plague, Dr. Yersin, the discoverer of the plague bacillus, reports twenty-five cases treated with serum from horses with but two deaths. A tabulated report by Dr. Paul Paquin, of St. Louis, on tubercular cases treated solely with tuberculin, is of extraordinary interest and value. The article further remarks that the antitoxins used in order of frequency are as follows: Those made by the New York City Board of Health, Behring, Gibier, Mulford, Aronson and Roux.

The field of investigation with thyroid extract is also well covered. Good results have been obtained with the extract in the treatment of myxœdema, cretinism, obesity, some forms of insanity, lupus, leprosy and acromegaly.

In considering the toxins, the author has shown that the injection of erysipelas serum has not been well received by the profession, nor has it been successful. On the contrary, by many experimenters it is considered dangerous and unjustifiable.

Mineral waters, wines and baths are all treated with a thoroughness which is in keeping with the high positions they occupy in modern therapeutics.

The synthetic compounds — so much in vogue at the present time — with their chemical formulæ, physiological actions and fields of application, receive considerable notice. Of phenacetine it says: "While as prompt and efficient as any of the antipyretics, it is the safest of all of them." Of salophen: "In acute articular rheumatism it is alleged to have been used with extremely good results." Extensive quotations are made from the clinical work of observers.

There is a forty-four-page supplement, which brings the book up to the hour of publication, concluding with an article on the therapeutic value of the Röntgen rays.

There is a complete general index, an index of diseases and remedies, and a list of authors cited.

Finally, it might be of some interest to the members of the Alumni Association to know that works of two of its members were quoted to considerable length. Abstracts from a paper by Dr. Ely Van de Warker, of Syracuse, add materially to the value of a lengthy article on "Transfusion and Infusion." The gist of a paper on "Salophen in Acute Articular Rheumatism," by Dr. Harry S. Pearse, of Albany, is given under that drug. The paper is based on the author's work with salophen in Bellevue Hospital.

Current Medical Literature.

Henoch's Purpura.— In a recent number of *Pædiatrics*, an interesting paper, by Dr. G. A. Sutherland, appears, dealing with this curious and somewhat unusual disease, and giving particulars of three cases of what he considers to be the same condition, which have come under his own observation. The first was that of a male child, aged three years and nine months, who had had, three months before admission to hospital, a rash, which had been supposed to be measles. Ever since he had been dull and languid, with occasional pain in the stomach, and a month after the first rash appeared he began to suffer from sickness after food, and a rash came out on his arms and legs, which had disappeared and appeared several times afterward. A few days before admission he had become drowsy, and had complained of abdominal pain. He had also

vomited some chocolate-colored material, and passed bright red blood per rectum. There was nothing important or significant in his previous health or in the nature of his food, and on admission he was well nourished and of good color. There were an eruption on his arms, feet and legs, and a few spots on his back, buttocks and abdomen. The gums were healthy, and physical examination revealed nothing abnormal, except pain on pressure over the abdomen. During his four and a half months' stay in hospital, hæmorrhages on the skin appeared abruptly on several occasions — twenty-five in all. The spots did not disappear on pressure; they were small and sharply defined, sometimes not elevated, but sometimes papular. They were not irritable, and although the eruption was widespread and general, the parts chiefly affected were the extensor surfaces of the arms, the buttocks, the front of the legs and the dorsa of the feet. There were also, on eleven different occasions, attacks of severe abdominal pain, accompanied or followed by vomiting of blood-stained matter, or the passage of blood from the bowels. The urine contained albumin and sometimes blood, and hyaline and blood-casts were present in great numbers. One curious point is that the knee-jerks were not obtained during the first seven weeks of his stay in the hospital. He was seen two months after his discharge, and had remained free from abdominal pain or hæmorrhagic outbreaks. The second case was that of a girl aged seven years, and the clinical history was characterized by attacks of abdominal pain, with vomiting of blood, melæna, bleeding from the nose and gums, together with repeated outbreaks of purpuric eruption, chiefly on the arms and legs, and albuminuria and hæmaturia. In this case, also, the knee-jerks were not obtained. She was in hospital for three months, and was discharged recovered. She relapsed, however, two months later, and developed symptoms of intussusception, with suppurative peritonitis, of which she ultimately died. A third case, similar in many ways, is also detailed. The patient was a girl aged ten years, who had attacks of abdominal pain, sickness, epistaxis and melæna, with purpuric skin eruption and the presence of blood and albumin in the urine. She also had articular pain and swelling, but she recovered. — *The Lancet, January* 9, 1897.

Practical Therapeutics.

Bronchial Catarrh.—Saenger (*Centralbl. f. innere Med.*, No. 17) recommends highly for bronchial affections the fluid extract of hydrastis in doses of 20 to 30 drops four times daily. This remedy diminishes the tendency to cough, and also the amount of expectoration, making it more liquid, and even changing it from a muco-purulent to a mucous secretion. It is not as prompt in its anodyne action as opium, but its effect is more prolonged, and the final result better. In the beginning stage of acute bronchial catarrhs it is valueless, while later, and in chronic bronchitis, it is most effective. In tuberculosis its action is most beneficial.

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Original Communications.

THE RESPONSIBILITY OF EPILEPTICS.*

BY ROBERT G. COOK, M. D.,

Rochester, N. Y.

The subject of this paper is one which has already been much discussed, but it still seems in an unsettled state in medical jurisprudence. This is shown by the fact that last autumn, in New York city, Maria Barberi was declared irresponsible for killing her lover because of epilepsy, and was then set at liberty by the court. It is certainly wrong that a woman should be allowed her freedom if she has a chronic mental disease which makes her irresponsible for homicide; and it seems strange, from a medical point of view, that Maria Barberi was not placed in a hospital for the insane. The result in this case is not remarkable, however, when one considers the position in which epileptics have been placed by the insanity laws of this State, and by decisions in other criminal cases. It has, until recently, been the custom of the State of New York to take no care of the epileptic unless he showed decided symptoms of insanity; and, even with the enlargement of the Craig Colony, he will not need to be under the care of the State unless he cannot earn his living. Frequently the establishment of epilepsy has been sufficient to cause a verdict of irresponsibility for criminal acts. The epileptic, then, has been allowed to care for himself as long as he could, and has been given liberty even if he proved dangerous to the community.

It is not necessary to remind you of the importance of this subject by describing homicides and other violent acts com-

* Read at the annual meeting of the Monroe County Medical Society, May 26, 1897.

mitted by epileptics, for your attention has frequently been called to them in your reading if not in your personal experience. One reason why the subject is of interest is that, under present conditions, there is a great temptation for attorneys and experts — so-called — who are willing to act as medical attorneys, to make a false plea of epilepsy, especially in murder trials, if the result of success is to be the entire freedom of the criminal.

A study of the mental conditions of epileptics will show that there are often definite facts which point to the legal responsibility of some and to the irresponsibility of others. The mere fact that a man has epilepsy does not settle this question of responsibility, though it is enough to arouse honest difference of opinion even among medical experts.

There is generally recognized a broad division of epileptics into two classes — the sane and the insane; and, in this State, those manifestly insane are sent to the State hospitals, while those who are considered sane are to be provided for by the upbuilding of the Craig Colony. Of the so-called insane epileptics sent to the State hospitals, a considerable number are committed to them because they have become demented after severe or long-continued epileptic paroxysms. Others are sent to the hospitals because they have at times symptoms of insanity in addition to their convulsions, and it is to this class of cases that we must direct our attention. The epileptic who is demented or presents other constant symptoms of insanity is not of special interest from a medico-legal point of view, for it is the epileptic, or the supposed epileptic, who is insane or irresponsible only a small portion of the time who causes difficulty. His mental symptoms, like his motor ones, are paroxysmal, and are almost as characteristic of the disease as the convulsions.

Epilepsy has been clinically defined by Hughlings Jackson (1) as an "occasional, sudden, excessive, rapid and local discharge of gray matter." Gowers (2) says that "it may be premised, as admitting of no question, that the muscular spasm is to be regarded as the result of sudden overaction ('discharge') of nerve cells, the violent liberation of nerve force, and that the sensations which, in some cases, the patient experiences before losing consciousness must be due, directly or indirectly, to the same cause." Gowers considers the motor and sensory symp-

toms only, but there is no reason why a similar sudden discharge of nerve force in some regions of the cerebral cortex should not produce psychical symptoms of sudden occurrence and temporary character, resulting in maniacal excitement, irresistible impulses or automatism such as are frequently observed in insane epileptics. Mental symptoms of this kind are not only often seen in epilepsy, but may be the only symptoms of that disease. In a paper on "Mental Epilepsy," read before the New York State Society, in 1893, Mosher (3) calls attention to the fact that an epileptic may have motor, sensory and psychical symptoms, or that he may have only one type of them, either motor, sensory or psychical. When the manifestations are psychical only, the case is one of pure mental epilepsy, though its epileptic character is frequently unrecognized, and it is classed as a case of temporary or periodic mania, somnambulism or hysteria.

From a clinical point of view, according to Regis (4), the temporary psychical disturbances in epilepsy may be pre-paroxysmal, may accompany the paroxysm or may be post-paroxysmal. The pre-paroxysmal symptoms are frequently irritability, depression, dullness or even stupor, but occasionally consist of periods of excitement, during which the patient may be dangerous. Sensory disturbances are common in this stage, and there may be terrifying hallucinations, which sometimes lead to acts of violence. These pre-paroxysmal symptoms may last for several days or be but momentary. Some of the so-called sane epileptics have actual hallucinations in this stage, when they are said to have an aura of the sensory type, and others have a very short period of psychical disturbance. A case of petit-mal, now under the care of the writer, who is able to do his work as a traveling salesman, though he formerly had grand-mal, and now has some loss of memory, says that for a few seconds before the attacks of petit-mal he suffers from the most profound feeling of mental depression. If such a psychic aura were prolonged it might easily lead to suicide.

The cases in which mental symptoms accompany the paroxysms and take the place of convulsions form the class known as larvated or masked epilepsy, though these names are sometimes applied to pre-paroxysmal and post-paroxysmal cases if the convulsions are nocturnal or very slight examples of petit-

mal. In some of these patients it is impossible to get any history of convulsions, and they seem to be examples of pure mental epilepsy. In other individuals convulsions occur at times, while occasionally the mental outbreaks take their place. Such patients may have attacks of mania of greater or less severity, but more often they have sudden irresistible impulses, which are frequently of a homicidal or suicidal nature, or lead to obscene or criminal acts. The mental state is frequently one of automatism, and though irrational things are frequently done, there are cases recorded in which acts of an involved nature have been carried out with seeming premeditation. When the period of mental disturbance is over, there is usually no memory of what has occurred, and most text-books state that memory is always lost, but this position is not just to some genuine epileptics. Drs. Furness and Kennon (5), of the Manhattan State Hospital, have recently reported two cases of epilepsy in which the convulsions were replaced by maniacal attacks, with homicidal impulses, in whom memory of the periods of excitement was retained. In a recent article in the *Medical Record*, Dr. William Hirsch (6) describes a case which is of great interest from a medico-legal point of view. His patient attempted suicide while in an epileptic paroxysm, and clearly remembered all the circumstances a few hours afterwards, but a few days later he had forgotten all details, and could only remember the horror caused by his hallucinations.

The post-paroxysmal period is that in which violent outbreaks are most common, and it is in this stage that the majority of medico-legal cases originate. The psychical disturbance may be shown simply by irritability and depression, or dullness, or there may be irresistible impulses of various kinds which are apt to lead to criminal acts. A period of automatism is common, but in hospitals for the insane an outbreak of maniacal excitement is probably the most frequent form of disturbance. Each variety is usually followed by a period of stupor or sleep, and there is usually no memory of the paroxysm. The excitement may be hysteroid in character, especially in adolescents, but the violence is greater than in pure hysteria. A boy formerly under my care at the St. Lawrence State Hospital passed through periods of hysterical excitement after his convulsions, when it was all that

four men could do to prevent him from injuring himself or others. As this patient improved, his psychical disturbance outlasted his motor attacks, and he presented symptoms of interest from a medico-legal point of view in relation to the question of motives. The boy was Irish, while the supervisor in charge of the department was English, and though in the intervals between paroxysms they were good friends, the first symptom of violence was frequently the abuse of the supervisor, because he was English, or an actual assault upon him.

In cases of nocturnal epilepsy, or when there are slight attacks of petit-mal, it may be difficult to get the history of the paroxysm. The writer now has a patient under treatment who did not know that he had convulsions until after his marriage, as his wife was the first to observe them; for, though they were severe, they had never occurred in the daytime. Somnambulism and occasional incontinence of urine are sometimes the only epileptic symptoms observed in nocturnal cases.

It has been attempted in this paper to briefly describe the types of transitory mental disturbance in epilepsy which warrant a physician in concluding that a case is irresponsible for acts committed while such disturbance exists. Some cases present but little difficulty, but others vary from the typical cycle of depression, convulsion, violence, stupor, and return to usual mental state.

The first thing to establish is the fact that the person has epilepsy shown by attacks of general convulsions, petit-mal or sensory or psychic disturbance. If one have epilepsy he may still be legally responsible for his acts, for, unless he has constant symptoms of alienation, there must be a definite relationship between the act and the paroxysm to establish irresponsibility. When acts are performed in the pre-paroxysmal or post-paroxysmal stage, there is usually no great difficulty in proving the disease, unless it takes the nocturnal form, or that of mild petit-mal. It should be borne in mind that a motive is not absolute proof of responsibility, for insane epileptics, during a paroxysm, sometimes attack those against whom they have a grudge in the intervals. There should be no rational period between the paroxysm and the act in the post-paroxysmal form.

If a case appears to be one of masked epilepsy, it becomes one

of the most puzzling with which the expert has to deal, and the difficulties are not diminished by the ease with which the condition is feigned by one of the criminal class. If previous paroxysms, with motor or mental symptoms, can be proved, the case becomes fairly clear, especially if the act is followed by stupor and loss of memory, but stupor does not always follow an attack, and memory is occasionally retained. The family and personal history and physical examination may be of help, especially in doubtful cases.

Epileptics who have had psychical disturbance are liable to similar attacks, and it seems the duty of physicians to take the ground that they belong to the class of the dangerous insane, and that they should be properly cared for.

45 PARK AVENUE.

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For the ANNALS.

AN INTERESTING CASE OF PSEUDO-HERMAPHRODITISMUS MASCULINUS COMPLETUS,*

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There is at the present time, at the above-named institution, a being, an inmate, who presents in its structure, and particularly in the conformation of its genital organs, some medically interesting features.

The person has been classed up to the present as a woman. She is now about 27 years old, and goes under the name of Cora W. She was admitted to the institution in 1878, and is a medium-grade imbecile.

* Observed at the Syracuse State Institution for Feeble-Minded Children.

The history of the subject is very meagre. C. has been an orphan since her childhood, and knows nothing reliable about her family, and the papers of admission made out from a county house over twenty years ago give no better information.

As to herself, C. informs us of the following: She was brought up as a girl; she manifested nothing unusual from other girls of her age with whom she has been associated; and she knew of nothing peculiar about her own conformation until vaguely informed to that effect when a little over seven years old by her father.

C. says she never gave much thought to her abnormality; and she grew up as a woman and thinks herself as such.

As to her plays, tastes and inclinations, C. declares the following: She always liked to mingle and play with girls, and was generally interested in their pursuits and pleasures. She enjoyed playing with dolls and pieces of fabrics, and preferred "little games" to playing ball or other boyish sports, and she never envied any one who pursued such sports.

As C. grew her tendencies remained feminine. She liked the company of young women, in this case her co-inmates, much better than the company of boys; as to real, dear friends, C. had none in particular until lately.

No desires for smoking, forcible exercises, or men's clothes.

As for the attachment above mentioned, its object is one of the inmates, a girl entirely feminine in her character and behavior. The friendship is mutually very strong, and is openly acknowledged on both sides. C. denies that it would, in any of its phases (which, by the way, are quite simple), bring her any specially acute or otherwise unknown pleasures.

Observed objectively by those who come frequently in contact with her (women officers and attendants), C., although differing slightly from the other inmates, was never seen to show any specially masculine proclivities or peculiarities, nor did she vary to any remarkable degree from her associates in behavior. She has been constantly in a large company of other feeble-minded women, mostly young, but her conduct has given rise to no suspicions of any kind, and she has never been seriously complained of by any of those with whom she came in contact. Her particular (above alluded to) friendship is known, is carried on openly,

and beyond some ordinary caresses nothing unusual has ever been observed between the two. (It may be properly remarked here that the general arrangements and the supervision in the institution afford but an exceedingly limited opportunity for any secret relations.)

During the medical observations and examinations, C. behaved very much like one would expect of a female imbecile of her grade under similar conditions. She was reserved, and she was bashful and hesitating, and would cry some when it came to the direct examinations; yet there were noticed no vaso-motor reactions. She was taciturn and undemonstrative.

C.'s PHYSICAL HISTORY AND EXAMINATIONS.

The subject has always enjoyed fair health, and at the present suffers from no diseases or infirmities.

C. has never noticed anything corresponding either to the female or male period of puberty. No menses, no vicarious losses, no nervous phenomena, no period of rapid mental or physical transformation. In fact, there have never been noticed, by the subject or by her attendants, any kind of menstrual discharge from the genitals, or any manifestations which might possibly be taken to indicate those female phenomena. Neither has there ever occurred, according to Cora, any small, brief, colorless discharge at night or in the daytime; in other words, nothing which might point to ejaculation, and similarly there were never noticed any indications of spermatorrhœa.

As to sexual desires and feelings, C. does not seem to comprehend the true and full meaning of those terms; and she denies ever having felt, on any occasion, any sensation in her sexual organs which would be unusual, and which would have attracted her special attention. Her relations with her friend bring her no pleasurable physical sensations. (In the opinion of the authors, this and one or two other of her preceding statements, though given frankly and adhered to by the subject, would better be regarded with some reserve.) C. denies having ever had any sexual approaches with any person, and she further declares she never had a dream of a sexual nature. Inquiries as to masturbation negative from both the subject herself and those who have her constantly under observation.

The examinations which were next proceeded with show the following interesting physical conditions:

C. is five feet four inches in height, and is of a rather slender build, her weight being 117 pounds.

The subject being dressed as usual in female attire, there is at the first look nothing about her which would be particularly striking to the observer. By closer scrutiny, however, it becomes apparent that C.'s form has not much of feminine grace; that the neck is rather thin, the chest flat and the hips narrow.

The subject is blonde. The hair is of a reddish-yellow color; its supply on the head is rather scanty. There are numbers of stray hairs over the face, especially in the places where the beard would grow in the male, on the chin in particular; the length of these hairs is not more than three-quarters of an inch, most of them being shorter.

The expression of C.'s face is not particularly characteristic of either sex. Dressed as a woman, the face of the subject looks more feminine, but should she dress in male attire, and have her hair cut and combed as a man, the face would undoubtedly look somewhat masculine.

C.'s voice is considerably deeper and harsher than the voice of an American woman.

In a nude state, C. presents the following additional appearances:

The body is symmetrical, and rather slender. There is about a medium amount of adipose tissue, and the skin is rather delicate and smooth. The body is not very hairy, except in the axillæ and in the pubic region. The slope of the shoulders is about midway between that which is characteristic of a man and that which marks a well-formed woman. The scapular region is not prominent.

The chest is well built, but the mammæ are flat and much smaller than those of an average woman; they are not larger than some which we occasionally see in strong, healthy young men. There is a low pad of quite soft, movable tissue within each breast. The whole thorax is quite straight and the waist but little constricted.

The hips are small, and the ilia are not prominent. The buttocks are small. The thighs are quite slender and quite vertical,

and do not diverge much from the knees upwards. The legs are slender. Hands of medium size and plain, with but little fat; feet rather large. (Figs. 1 and 2.)

The pubis is very hairy, and the arrangement of the hair, as well as the shape of the mons veneris, are feminine. The subject standing erect, the following aspect of the external genital organs is visible: There is an organ under the mons veneris which looks like pudenda, and this organ appears to separate in about the ordinary place into two labia majora; but just from the upper angle of the fissure there protrudes forward a small body which looks very much like the penis of a small boy, particularly like the circumcised penis of a three or four years old Jewish child.

A thorough exploration of C.'s genital organs was undertaken next, with the following results:

The subject lying on the back, with limbs apart, the picture which presents itself is peculiar, combining in one some characteristics of the female and some of the male external genital organs. The mons veneris is quite prominent, and, as said before, of feminine appearance. The soft tissues immediately beneath are about equally as prominent as in a woman. Then begins the genital fissure, and from its uppermost angle points the little penis-like body. The fissure continues below in a similar way as in a female, only that it is slightly deflected to the left; and on each side of the fissure there is an oblong body, corresponding to the labia majora. Of these two bodies the left is the lower; their size is not extraordinary; their shape, however, differs from the regular shape of labia majora, and instead of being the largest above, and then gradually tapering downwards, the form is almost inverted, the largest parts being the lowest. The two bodies have the appearance of two bags, well filled with some liquid and suspended from the mons above. The space below these bodies is hairy and shows nothing special. Anus normal. (Fig. 3.)

On separating the "labia," they are found to be single, there being nothing which would correspond to labia minora. The penis-like body arises from the place of the clitoris; it is two inches long and of the thickness of a medium-sized index finger. Its form is entirely like that of a penis, there being a well-formed glans and prepuce. The tissues of this little body are quite

To Illustrate the Article by Drs. Carson and Hrdlicka, on "An Interesting Case of Pseudo-Hermaphroditismus Masculinus Completus"

Albany Medical Annals, October, 1897.



resistant, and it points straight forward. In the place of the meatus there is a little scar. All the parts between the "labia," from the root of the penis-like body downward to the termination of the fissure, are clad with mucous membrane. Below the body just described is a fairly well-formed vestibule, but without any urethral opening. Still further down the mucous membrane turns in a funnel-shaped way inwards; and it ends in a small, circular opening, which looks much like the hymen-openings of some virgin vaginas. Still lower there is the ordinary triangular fourchette such as we find below in every vagina.

The "labia," on being palpated, are found each to contain, in its lower enlarged extremity, a body, which is oblong, of the shape and form of a medium-sized testicle, the left slightly smaller than the right; and from each of these bodies, their lower ends, there leads a cord to the external abdominal ring. These cords are of the size of a boy's spermatic cords, or a little larger. (Fig. 4.)

Internal examination of C.'s genital organs was attended with some difficulty. The above-named mucous membranes ("funnel" before the vagina) were found of a live, red color, apparently congested and very sensitive. The urethral opening was found just below the edge of the vestibule. The "hymen" would admit a finger without much difficulty, and the finger, during the first two examinations, could be pushed perhaps an inch, or an inch and a half, upwards, through a canal which was more spacious than the introitus. At this stage at both times the examination had to be abandoned, as it gave rise to much pain. It was impossible during these examinations to detect any traces of a prostate or of an uterus.

Subsequently the case was re-examined by the medical assistant at the institution, who, with the help of cocaine anæsthesia, succeeded in reaching the end of the vagina. It was about two and one-half inches distant, and "ended in a scarcely perceptible nodular pouch, from which ran two cord-like bodies down the sides of the vaginal wall. There was no uterus and no ovaries." A physician who examined the case with the medical assistant remarked about the canal that "the feel was like that of a vagina after hysterectomy."

On the base of the preceding facts, C. was diagnosed to be a form of hermaphrodite, and namely that form which is characterized by apparently feminine external and to some degree also internal genital organs, but is really a male, possessing a pair of testicles. This anomalous condition is the *pseudo-hermaphroditismus masculinus completus*, or, according to Hallopean, *androgynous hermaphroditismus.*

This form of hermaphroditism is by no means rare, but very few of the cases ever described possessed so well-formed and interesting a complex of genital organs as our subject. The points of special interest in this case are:

(1.) The female tinge to the otherwise masculine form of the body, and similar tinge of the mental characteristics of the subject.

(2.) Rudimentary penis, without hypospadias and without meatus; female-like urethra.

(3.) Complete cleft of the scrotum, with mucous membrane-clad parts within; both testicles in the proper position.

(4.) A fairly well-formed hymen and vagina, with probably very rudimentary internal female sexual organs.

It might be interesting to discuss here the problem of what should best be done with a subject of C.'s peculiar attributes and in C.'s position; but such a discussion would be somewhat extraneous to the main object of this paper, which was merely a description of the case. The following list includes cases from literature, which are of more interest for comparison or contrast with the case just presented.

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A SERIES OF CASES OF DIPHTHERIA, WITH SPECIAL REFERENCE TO THE ANTITOXIN TREATMENT.*

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All the cases in this series were both biologically and clinically cases of diphtheria, and were, for the most part, of exceptional gravity, either because of the tender age of the patient, the surroundings, the actual character of the disease, or the duration before treatment was begun.

About 60 cases of the disease came under treatment. From among these the more severe ones were selected for treatment with antitoxin, numbering 30.

It is a matter of regret to me that I could not use the serum in all cases, but to patients in sometimes more than moderate circumstances the price is deterring. Nor was this the only reason for objection on the part of the family. Certain physicians, who were apparently a trifle unfamiliar with the action of the serum, had, with great want of tact, to say the least, criticised the use of the serum in an unfavorable manner, basing their opinions on several deaths occurring in cases treated with serum. The fact that these cases were never seen by them did not influence their verdict in the least. Thus one, "I would not use it if the patient were my child." This is one of the most harmless opinions. But it contains enough bias for the partisan layman, who judges only *post, ergo propter hoc.* Another: "It causes paralysis." This practitioner has probably been fortunate enough not to see post-diphtheritic paralysis, or his cases died early. A third: "It is poison, and penetrates the whole system, and kills the patient." I make no comment on this last assertion. My command of language is too feeble to do justice to it. Suffice it to say that over

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100,000 injections have been made, without untoward results, in France alone. That deaths have followed the injection of antitoxin I will willingly admit. But so have deaths followed gr. ½ of morphine; quinine has produced toxic symptoms; shellfish have poisoned certain individuals, and even the apparently harmless strawberry has produced highly unpleasant results. But we do not, for that reason, expunge morphine and quinine from our *materia medica*, or shellfish and strawberries from our *menu*. So long as human beings are constituted as they are, so long will idiosyncrasies exist, and so long will the action of remedies be influenced by them.

Antitoxin is no longer an experiment — it is as much an integral part of our *materia medica* as is calomel. I cannot, therefore, agree with the learned professor who, in a recent periodical, would have us believe that it is simply a fad; that herbs and simples and a few antiseptic sprays are fully as good as the serum; nor yet with the wildly exaggerated statement of a western writer, who says in effect, "I now go to see my cases of diphtheria and membranous croup as unconcernedly as those of broken legs," and claims to have treated 30 to 40 cases of diphtheria without a death. His certainly is a spot favored of the gods, where diphtheria comes simply as a pleasant break in the routine of such dangerous diseases as typhoid, pneumonia and scarlet fever, and where compound, comminuted, complicated fractures are apparently unknown.

Such unqualified statements do a great deal more harm among thinking men than do the most unfavorable reports. There is no royal road to the therapeusis of diphtheria. Success here, as elsewhere, is due to scientific, well-directed efforts to the proper valuation of the phenomena presenting themselves, and the judicious use of the proper means to overcome or modify them. In other words, it is necessary to use the serum in the proper dose sufficiently early and often, and to aid its action by all means at our command. To cry "sure cure" is to lower a scientific preparation to the level of a quack nostrum.

Case I. Male, aet. 6 years. Disease of three days' duration; nares, tonsils, hard and soft palate, covered with membrane; lips excoriated. Pulse 120, weak. Temp., over 102. Odor, offensive. Behring's serum, 1000 U, iron tonic, digitalis, alcohol.

Membrane disappeared within three days. Patient did well; got about at end of eight or nine days; ate well and slept well. On twelfth day after recovery from the throat symptoms, he was suddenly seized with a severe pain in left side of thorax, and died after a few hours, quite suddenly, evidently of cardiac paralysis. Urine negative.

Case II. Female, aet. 16 months. Disease of two days' duration. Membrane involved tonsils, soft palate, nares and larynx. Intubation, New York Health Board serum, 3000 U. No effect; child died within 24 hours.

Case III. Female, aet. 10 months. Disease of two days' duration. Membrane developed after an attack of aphthous stomatitis. When the aphthæ had nearly disappeared, pharyngeal and laryngeal diphtheria developed. Intubation, New York Health Board serum, 2000 U. Death from asphyxia within next 24 hours.

Cases IV, V and VI occurred in the same family.

Case IV. Male, aet. 8 years. Hæmorrhagic diphtheria. Case five days old when serum was used; glandular swelling at angles of jaws so severe that child was unable to move head, which might be said to resemble, with the neck, an irregular pyramid, with the base resting on the shoulders. Here and there rupture of the cuticle occurred and oozing of an ichorous fluid. New York Health Board serum, 2000 U; repeated next day. In addition was given alcohol, digitalis and strychnine. Membrane disappeared within two to three days. Swelling began to disappear; appetite returned; purpura began to fade, when death suddenly occurred on sixth day after injection. Pulse had been feeble in the morning, and an increase in the amount of stimulants had been ordered, but no effect followed its administration. Some albumen and blood had been found in the urine. No casts.

Case V. Sister of preceding patient, aet. 2½ years. Had the disease three to four days before she was seen, membrane then covering tonsils, uvula, palate and filling nares. New York Health Board serum, 2000 U. Child was moribund at the time, and died within 24 hours.

Case VI. Brother of preceding patients, aet. 1½ years. Duration the same as in previous case. New York Health Board serum, 1000 U. Throat cleared up. But in spite of active stimu-

lation (alcohol, digitalis, strychnine), at end of about ten days he died suddenly of cardiac paralysis. Urine had been negative.

Case VII. Female, aet. 5 years. Was always inclined to be sickly. Some hypertrophy of posterior adenoid glands. Saw case when disease was four days old. Membrane filled fauces, nares and a great part of hard and soft palate; membrane was black in parts. Appearance of child bad; earthy pallor, apathy. New York Health Board serum, 1000 U. In eight hours membrane had diminished markedly. In 24 hours more it began to peel off in large patches. In four days it had practically disappeared. The pulse rate throughout was high (130-140), and never fell much below this. In character, it was feeble and fluttering. The temperature on the first day was 103°, but soon fell after the administration of the serum. One of the most urgent symptoms, however, and one that continued with more or less persistency throughout the whole course of the disease, was vomiting. Nevertheless, patient began to do fairly well. Appetite returned, vomiting appeared to be subsiding, and the patient entered on a somewhat slow recovery. The heart, however, remained weak and rapid. On the sixth day I was suddenly sent for in great haste, and found the patient in collapse. Hypodermatic injections of strychnine nitrate, 1-20, every two or three hours, succeeded in rallying the heart sufficiently to tide the patient over the next two days, when the heart failed entirely and patient succumbed. Urine was always negative.

Case VIII. Female, aet. 8 years. Disease five days old when first seen. Membrane black, covering tonsils, pharnyx, hard and soft palate, and filling nares. Patient was in an almost typhoid condition. Pulse 140, and weak. Child had otherwise been always well. New York Health Board serum, 1000 U, immediately; in 48 hours repeated the same. At end of week throat was clear, although no other measures were used, except supporting and tonic treatment. Patient did well until end of two weeks. Then some albuminuria was discovered. No casts. But patient seemed to improve, nevertheless; gained somewhat in weight, slept well, ate well. Six weeks after diphtheria had apparently ceased, began to find difficulty in locomotion, which finally became impossible. Sensation remained apparently nearly intact. Within a few days trouble spread to arms, appearing

first in hands, then in forearm, then upper arm and shoulders. The parts next attacked were the nerves of the external recti of the eyeballs, of deglution, of the larynx, and finally of the lungs and heart in the order named. Death ensued two months after the diphtheria was cleared up.

Case IX. Female, aet. 1 year. Disease three days old, perhaps more. Membrane filled pharynx, nares, larynx, and covered tonsils. Child cyanotic. Intubation and New York Health Board serum, 2000 U. Child died of asphyxia, due to extension of membrane below tube, within 24 hours.

Case X. Female, aet. 3 years. Disease one and one-half days old. Child well nourished, bright, active. Membrane covered tonsils and soft palate. Membrane yielded rather slowly. While it did not encroach further upon healthy mucous membrane, it was nearly three days before it began to disappear. Child recovered very slowly. Urine at end of second week after recovery began to show traces of albumen. No casts. This albuminuria persisted. About middle of second week there was suppression for two days; but finally, by the use of calomel and nitroglycerine, the kidneys again began to act, and the urine, at first scanty, but within a few days normal in amount, was voided. Patient improved somewhat now under iron (glycerole iron chlorid) and digitalis, although the albuminuria persisted. At end of third week child awoke one morning with converging strabismus of left eye, ptosis and dilated pupils. Within 48 hours this condition had partly passed off under the internal use of strychnine; but at the end of that time vomiting began, accompanied by headache, photophobia and meningitic cry. Twelve hours afterward child became unconscious. Cheyne-Stokes respiration began, and child died within six hours more, in spite of the most active hypodermatic stimulation (strychnine, alcohol, digitalis, nitroglycerine).

Case XI. Female, aet. 9 years. Disease had just begun when patient was seen. This case shows very strikingly the manner in which infection often spreads. The disease first appeared in a niece, infected the mother and a tenant living in the same house; an aunt, sister to patient, became infected there, had the disease herself, and communicated it to the patient, and this in spite of the most active fumigation performed by the Health

Board at both houses. The patient is a stunted child, looking to be barely more than 6 years old. Has always had extremely large tonsils and hypertrophic adenoid tissue. In spite of repeated advice, parents neglected to have the redundant tissue removed. The family objected to the serum treatment, and case was allowed to go on under sprays of peroxide and internal administration of iron, bichloride and alcohol. Matters grew rapidly worse. When child was almost moribund, permission was given to use the serum, but patient died twelve hours after injection, and five days after inception of the disease. The membrane had by this time filled the pharynx and nares.

Case XII. Male, aet. 8 years. Disease two days old. Tonsils covered by a grayish, in some parts black, membrane. Pulse 120; temp. 102°. New York Health Board serum, 1000 U. Membrane disappeared within three days. No sequelæ.

Cases XIII, XIV and XV occurred in the same family.

Case XIII. Male, aet. 8 years. Disease two days old. Tonsils covered by a grayish, in some parts. black, membrane. Pulse 120; temp. 102°. New York Health Board serum, 1000 U. Internally, glycerite of iron. Spray of peroxide of hydrogen every three to four hours. Recovery in three days. No sequelæ.

Case XIV. Mother of previous patient, aet. 32. Contracted disease about one week after son. Attempted to control disease by local measures, but it spread so rapidly that at end of 24 hours we were forced to inject 2000 U New York Health Board serum. Patient's pulse was at the time 128; temp. 104°. She was delirious at times, was unable to swallow even liquids, and suffered great pain. Tonsils closed up pharynx and posterior nares. A dirty, foul-smelling membrane covered tonsils, soft and greater portion of hard palate. Within 24 hours patient's temperature began to sink, pulse became 100, and on the following day 80. At end of four days patient could swallow with comfort, the parenchymatous tonsilitis accompanying the diphtheria gradually subsiding. At end of one week patient was able to leave her bed, and at end of two weeks was again attending to her duties. But what had appeared at first to be a simple paralysis of palate, due to the inflammation of the diphtheria, became more marked, until a true diphtheritic paralysis of con-

siderable severity stood revealed. The act of swallowing became extremely difficult, as did also enunciation. This condition persisted for several weeks, and then grew slowly better. Two months after its first appearance it completely disappeared. At end of first month after appearance of original disease, patient began to complain of numbness of fingers and toes, with considerable loss of function. This neuritis increased until upper and lower extremities became quite paretic and almost anæsthetic. Under treatment, after two to three weeks all symptoms gradually disappeared. (Strychnine, phosphate iron, faradism.) Urine always normal.

Case XV. Female, aet. 1½ years, daughter of above. Contracted disease three weeks after mother. New York Health Board serum, 1000 U. Recovery within three days. No sequelæ.

Cases XVI and XVII occurred in two males, aet. respectfully 3 and 2½ years. The membrane in both cases covered tonsils, uvula and soft palate. Both cases were two days old when seen. The glandular enlargement was marked. Pulse rapid and weak. Temp. 103° and possibly higher. Both recovered within three days under 1000 U, injected within 48 hours. No sequelæ, unless some arthritic pains occurring in the younger child several weeks afterward were due to the injection. The right ankle was the joint affected. The right thigh had been the site of the injections.

Case XVIII. Female, aet. 8 years. Membrane as in previous cases. Pulse 130. Temp. 104°. Duration of disease one day. New York Health Board serum, 1000 U. Recovery complete at end of three to four days. No sequelæ.

Case XIX. Male, aet. 3½ years. Within 12 hours from time that first minute patch appeared disease spread over whole tonsil of the one side and began to attack the other, in spite of the most active local measures (peroxide spray every 15 minutes, and iron and bichloride internally). At end of this time (12 hours) injected 1000 U, Behring. Within 36 hours membrane had disappeared. No sequelæ.

Case XX. Male, aet. 6 years. Was seen when first symptoms appeared. Parents were, however, averse to injection; but as case grew steadily worse under the usual local treatment and

internal medication, injection was finally permitted on the third day. By this time tonsils and uvula were covered, and glands at angle of jaws began to swell rapidly. 1000 U, New York Health Board serum. Membrane began to disappear within 24 hours. Temp. fell from 103° to 100°. Glandular swelling had nearly disappeared. At end of three days recovery was complete. No sequelæ.

Cases XXI and XXII occurred in the same family.

Case XXI. Male, aet. 3½ years. Membrane only 24 hours old, but it had in that time covered tonsils and soft and part of hard palate. Child was quite bright and cheerful; however, pulse was good. There was considerable swelling of the glands. Parents were at first averse to the use of the serum; but on second day, when child began to show more symptoms of infection, consent was given. Membrane had by this time begun to spread over hard palate. Injection of 1000 U, New York Health Board serum. Membrane disappeared within 72 hours. Slight paresis of soft palate three to four weeks subsequently, which disappeared within a few days under no particular treatment.

Case XXII. Infant sister of above, aet. 16 months. Contracted the disease several weeks afterward. No injection until fifth day, when membrane was about as in the previous case. Throat recovered in about same time as previous case, under 1000 U, New York Health Board serum. No sequelæ.

Case XXIII. Female, aet. 6 years. Disease of two days' duration. Membrane covered tonsils, uvula, soft and one-half of hard palate. Much glandular enlargement. Pulse 130. Temp. 103°. Injected 1000 U, New York Health Board serum. Membrane began to disappear within 24 hours; at end of 72 hours was entirely gone. No sequelæ.

Case XXIV. Female, aet. 7. Older sister had the disease first, but recovered readily under local and tonic treatment (peroxide of hydrogen, iron, etc.). In both cases there were but few bacilli, but great numbers of streptococci. Patient did not do well under this treatment; glands began to swell enormously. Membrane filled pharynx and nares so that on third day I decided to use antitoxin, 1000 U, New York Health Board. Membrane had completely disappeared in less than four days, although all other treatment was stopped after the injection. No sequelæ.

Case XXV. Female, aet. 4½ years. Disease of one day's duration and covered one tonsil. There was a great amount of glandular swelling of that side. Local treatment had been of no avail. Injected 1000 U, New York Health Board serum. Pulse at that time was 135. Temp., 103°. Disease began to ameliorate within six hours, temperature subsiding, as did also pulse rate, both approaching nearly to the normal. Within thirty-six hours disease had practically subsided. No sequelæ.

Case XXVI. Male, aet. 8. Throat symptoms were preceded by a severe convulsion. Patient had complained of some slight discomfort on swallowing, but throat failed to reveal anything on inspection. On the following day, however, a very small patch of membrane was found. The usual local and internal remedies were tried, but without success. The membrane spread within the next 24 hours sufficiently to fill nares and cover tonsils, uvula, hard and soft palate, the former almost to the incisor teeth. Certain portions were quite black. Injected 1000 U, New York Health Board serum. Membrane began to disappear within two days. Within four days throat was entirely clear. Patient made an excellent recovery for several weeks, when albuminuria began, preceded by scanty micturition. Under calomel, ¼ gr., the urine became normal in amount within a few days. The albuminuria persisted for several days. No casts were ever found. There was no œdema. At end of two months the albuminuria ceased, but the child suddenly developed a paralysis of the palate, pharyngeal constrictors and posterior crico-arytenoid. This last constituted a most dangerous element, and very nearly caused the patient's death from asphyxia. A very annoying symptom was that caused by the patient's disability to swallow all the saliva accumulating in his mouth, part of which consequently ran into larynx and caused an uncontrollable and highly distressing cough. At about the same time strabismus developed. Under treatment (strychnine, iron, digitalis, nitroglycerine), these symptoms cleared up in about four weeks. Patient is entirely well to-day.

Case XXVII. Male, aet. 7. Membrane on posterior wall of pharynx. Spray of hydrogen peroxide and bichloride and iron internally. Membrane did not yield. On third day it extended to the larynx. Intubation and injection of 2000 U, New York Health Board serum. Recovery in four days. No sequelæ.

Case XXVIII. Female, aet. 4 years. Pharyngeal and laryngeal diphtheria of two days' duration. Dyspnœa marked, pharyngeal membrane slight. 2000 U, New York Health Board serum. No other treatment. Recovery in three days. No sequelæ.

Case XXIX. Female, aet. 3. Pharyngeal and laryngeal diphtheria. Pharyngeal membrane covered tonsils and soft palate. Duration of disease two days. Intubation and 2000 U, New York Health Board serum. Recovery complete in three days. No sequelæ.

Case XXX. Male, aet. 5. Child had a rash several weeks previously. No physician was called. Patient had a sore throat; also vomited. He is desquamating at present. The parents now sought medical advice, because he was again complaining of his throat, and was becoming very hoarse. Examination revealed membranous croup. An attempt was made to relieve the condition by the use of sublimed calomel; but the dyspnœa became so marked that 2000 U, New York Health Board serum were injected on second day. Some membrane was recovered from larynx, on intubation, this precaution being necessary from the rapid advance of the disease. Pharynx contained but little at the time. Patient was so considerably below the normal stature that a 4y tube was inserted. Tube remained in situ for eight days, when it was removed. Recovery up to this time has been complete, no sequelæ having occurred.

In addition, two cases of severe streptococcus angina came under serum treatment. The first was a case treated two weeks previously for true diphtheria with 1000 U, Behring's serum (Case XIX). The membrane spread rapidly over both tonsils and uvula. Glandular swelling became marked. The pulse went up to 140, Temp. to 103°.5. Peroxide, bichloride, iron and nitrate of silver made no impression. Pending the bacteriological report, injected 1000 U, Behring's serum. All other treatment was discontinued. The results were surprising. Within twelve hours the hyperæmia of the throat subsided; the temperature fell to 100°.5, the pulse to 100. In 48 hours the throat was practically well, and all other symptoms had disappeared entirely. Culture contained streptococci only.

The second case occurred in an infant one year old. Disease

was grafted on an aphthous stomatitis. The membrane spread so rapidly that in 24 hours it covered tonsils, uvula and soft palate. Gangrenous patches were visible here and there. While awaiting the bacteriologist's report, as local treatment had no effect, injected 1000 U, Behring's serum on third day. The pulse at that time was 150, but strong. At end of 72 hours throat was clean; pulse was normal; glandular swelling, which had been very marked, had also disappeared. About two weeks later a fine red papillary rash made its appearance, which may or may not have been due to the injection. No ill effects. Culture contained streptococci only.

It is, of course, impossible to insist that in both cases the antitoxin effected a cure. Streptococcus sore throats frequently run a self-limited course.* It is possible that both cases were of this nature, or that the first was such and the second one of true diphtheria, in which, as Fränkel has suggested, our present methods of examination are inadequate.

It will be seen that but very few cases were seen within the first day, and that of these none died. Out of eleven deaths, two were due to the effects, the immediate effects, of diphtheria, the toxæmia. Both were practically moribund when injected on the fifth day of the disease. Among the remaining nine were three cases of diphtheritic laryngitis, occurring in three children, respectively 10, 12 and 16 months old, cases in which, I believe, no treatment would have availed, because of the particularly unfavorable conditions present at that time of life, viz., the smallness of larynx, trachea and bronchi, and the relatively great proximity of the lungs to the origin of the disease. The others, six in number, were for the most part neglected cases of great severity. Thus, but one was seen before the third day. The others were not treated until four or even five days had elapsed. Death occurred in all, due to post-diphtheritic paralysis of the heart.

The sanitary surroundings in four of these cases were very bad. They occurred on unpaved streets, which constitute the approaches to dumping grounds, the houses in which these cases occurred being immediately adjacent. It has been the practice to throw here not only ashes and excavated earth, but also every

* Should have been still immune to diphtheria.

conceivable form of rubbish and garbage. These grounds are used as a playground by children of the neighborhood. Some of these children are in the habit of eating partially decayed fruits found here by them. Heaps of ashes and garbage may frequently be found in the streets themselves. This latter, while decaying during the warm weather, fills the whole neighborhood with an insufferable stench at times. The drainage in some of the houses is accomplished by the simple process of allowing the waste water to escape on the surface of the ground, and to flow in little rills down the street into some natural hollow. Defective privy vaults contribute their quota toward swelling these streams. While no one factor can be held wholly responsible for an outbreak of diphtheria in any given locality, it must, however, be admitted that such a condition as this is not conducive to robust health in its vicinage.

The unpleasant effects following the use of antitoxin, such as eruptions, arthropathies, albuminurias of a certain form, and the like, are not to be ascribed to the antitoxin itself, but, I believe, in view of the experiments that have been made, to the vehicle, the serum. It is advisable, for this reason, to use as concentrated a preparation as possible. With our modern and daily increasing knowledge of the production of antitoxin, a preparation of antitoxin free of the serum may not unreasonably be soon expected, which, I confidently believe, would remove the slightest objection to its use.

Every form of treatment in every disease has its opponents and its advocates. The latter have had good results, the former bad ones; and it is often impossible, in the clangor of unreasonable enthusiasm meeting obstinate prejudice, to arrive at the exact truth. It is unfortunate that, in the medical profession, in which, above all others, calm and dispassionate judgment should prevail, the reverse is so often the case. Patient and exact observation, both clinically and otherwise, is the only means of arriving at a just conclusion as to the merits or defects of a remedy. With respect to the remedy under discussion, there have been sufficient observation and evidence adduced therefrom to cause one to abandon unfavorable personal opinion, no matter how apparently well founded it may be. Thus, in Berlin, since the extensive use of antitoxin, the relative and actual death-rate has been about one-half that of five years ago. In 100 towns of

France, in which the average number of deaths for every six months in the time from 1888 to 1894 had been over 2,500, the rate during a corresponding diph period of 1895 was but 104. The report of the American Pædiatric Society shows that out of 5,974 cases injected, but 12.3 per cent. died. In this report doubtful cases that recovered were excluded, while doubtful ones that died were included, as were also those that were moribund. Paralysis occurred in 9.7 per cent., " showing," the reporters say, " that the serum has less effect on the nervous system than on any other part of the body."

Billings, Jr., has made an investigation of the effect of antitoxin on the blood corpuscles in diphtheria, and finds that under antitoxin treatment the diminution of the red corpuscles, and consequently of the hæmoglobin, is much less marked than in those not so treated, or does not occur at all. In one-half of a number of healthy individuals infected, there was a very moderate reduction of the red corpuscles. There was in neither class of cases any change in the morphology of the corpuscles.

Of the cases that recovered (19 in number), six were seen within the first day. The recovery was speedy, and there were no after-effects, except in one case, that of an adult. They were, however, never severe enough to threaten life even remotely. Seven were seen after the first, but before the end of the second day. Three of them were complicated with membranous croup. In two of these intubation was performed as a precautionary measure. After-effects in but two, neither having been laryngeal; in the one taking the form of a slight paralysis of the palate, in the other that of a very severe paralysis of some of the ocular muscles, those of the pharynx and larynx, and albuminuria. Five were seen after the third, but before the end of the fourth day. There were no sequelæ. One of these was laryngeal; one was seen after the fourth day and before the end of the fifth, which also made an uncomplicated recovery.

The antitoxin treatment commends itself also for its simplicity, especially to those of us who practice among people whose means do not allow them to employ trained attendants. In order to appreciate this fully, let me contrast the two methods, the local and the antitoxin treatment, and incidentally point out some of the dangers and disadvantages of the former. I shall suppose a case of considerable severity. Under the local treat-

ment, for such it was classically, to its greater extent, the patient was put on stimulants and a local application, consisting of some liquid spray or a dry insufflation. In order to obtain any effect it was necessary to make this application every half hour, amid the cries and struggles of the child, the reverse being very rare. Even in skilful hands, under these circumstances the medication was apt to be ineffectual; in unskilful ones positively harmful, wounding of the gums and palate occurring frequently, and presenting to the disease a new focus from which to spread. Every one of these combats represented just so many wasted heart-beats, both in number and force; just so much increased destructive metabolism; just so much more waste material crowded on the kidneys, especially vulnerable in this disease.

After the first 48 to 72 hours the picture changed. From disease and loss of sleep the patient becomes weak and depressed. Perhaps the stomach is unable to retain anything. Every attempt to cause the child to assume the erect position is fraught with danger to the heart, which is beating 140 or over; pulse weak and thready. The attendants are becoming exhausted; measures are not carried out with that rigor that the wealthy can purchase. The disease barely held in check, begins to devastate rapidly an organism that can no longer resist, and within a few more days the patient succumbs to what? The disease in spite of the treatment, or the disease and the treatment?

Under antitoxin the aspect is materially different. After satisfying himself of the nature of the case, the physician injects one, two or three thousand units, as he sees fit, and repeats in 12 to 24 hours. The throat may be sprayed at intervals of two to three hours, and food and stimulants may be administered in the same intervals. In this way the patient husbands his strength much more, and is far better able to combat the disease. In the majority of cases there is at first the same resistance on the part of the patient; but at the end of one or two days usually very little trouble is experienced, as the little patients become much more tractable and cheerful under the improvement following the injection and their consequent beginning return to health.

This picture is not a fanciful one. I do not, however, wish to say that in every case of the former death will follow, and in every case of the latter recovery; but I do wish to say, and to insist on it most strongly, that, given two cases of equal severity,

cæteris paribus, the results will be far more frequently as depicted here than they will be reversed.

To sum up, then, it is my opinion that antitoxin should be used as early as possible, even before the bacteriological examination is made, if the symptoms appear at all urgent. If possible, it is better to inject before the glandular and other systemic symptoms appear, rather than to await their development. I have worked on this principle, and have so far had no reason to regret it; rather the reverse, I believe.

Roux gives similar advise, as does also the committee of the American Pædiatric Society. As probably in a majority of cases the antitoxin does not begin to exert its influence in less than 24 hours, when there is a laryngeal complication, it is advisable to intubate in most cases. The antitoxin itself is harmless. In order to obtain a decisive effect early, a liberal dose of a concentrated preparation should be used, rather than a moderate dose repeatedly. If there is no improvement within 24 hours — meaning by improvement a shrinking of the membrane or a subsidence of the pharyngeal hyperæmia, or both — the same or a larger dose should be used. Albuminuria or peptonuria, due to the antitoxin, may possibly occur without the presence of casts or the appearance of œdema, and need not excite alarm.

Deaths in unsuccessful cases occur under the same circumstances, and differ in no wise from deaths following diphtheria not treated with antitoxin. In these cases the cause lies in the actual initial severity of the disease, the lateness of the injection or an insufficient dose of the same. The increase of palsies under this treatment is apparent, but not real, and is due to the survival of a greater number of severe cases under this treatment.

While I have admitted the occurrence of deaths following the injection within a short time, it must be remembered that no absolute proof has ever been furnished that they were due to the injection.*

351 SOUTH PEARL STREET.

* Since the above was written, seventeen additional cases have been treated with serum. Among these were five cases of diphtheritic laryngitis. One of these was lost, a child of ten years. The parents, because of obstinate prejudice, would not allow intubation and injection until the day before death. Pneumonia existed at the time. Of the remaining four, the first was eight years old, the second less than three, the third, twenty months, the fourth, eighteen months — intubation in all cases. The serum shortened the duration of the disease considerably. No pulmonary complication followed the use of the serum. Of the twelve pharyngeal cases, one died, although injected on the second day, of post-diphtheritic paralysis, another is beginning to recover from the condition; the other ten recovered without complication, excepting one in whom albuminuria existed for a short time.

NOTES TAKEN FROM THE CLINICAL LECTURES OF DR. JAMES GREGORY, OF EDINBURGH, IN 1787.

(Edited, with Introductory Note, by Dr. G. ALDER BLUMER, Utica State Hospital. Continued from the ANNALS of July, August and September, 1897.)

Janet Hunter. Phthisis Pulmonꝭ.

There could be no doubt that this patient's complaint was Phthisis pulmonalis, & consequently the prognosis was very bad, if not certain death. In a confirmed phthisis we can place no faith in any apparent recovery, as the disease frequently recurs after the space of three or four years, while the patient appears quite recovered. However there are some rare cases of the recovery being lasting, as in incipient phthisis, where even the prognostic is generally unfavourable, tho' by avoiding all occasional Causes, & particularly Cold, the patient may sometimes recover.

I take the disease now called phthisis pulmonalis to be really a scrophulous disease. I have not seen a Case of Hæmoptysis followed by Phthisis except where there was the scrophulous Taint or Habit. No one can say why at one time of Life the scrophulous tumors should exist externally, & at another in the Lungs. We must content ourselves with knowing this to be a matter of fact.

I take the difficulty of cure to be owing to the Difficulty of removing all scrophulous ulcers; for in ulceration of the lungs from wounds, or from pleurisy, such hectics have been sometimes removed. One case of this kind I cured a few years ago in the Clinical Ward.

A few ounces of Blood taken away although the case be scrophulous, sometimes gives relief. With the same view *Blisters* may be employed: but what is most to be depended on, is to send the patients to a warm climate, in order to avoid our rough, changeable Winter weather.

The Island of Madeira is generally preferred as being one of the most mild and temperate Climates we are acquainted with; & where there is very little change from summer to winter, never more than 12° of Farenheit's Thermometer. A very warm Climate is equally improper with a very cold one. The

sea voyage by the gentle exercise & the nausea it produces is sometimes of service.

A Flannel Shirt should be worn, as the avoiding Cold relieves the lungs.

As I regard Phthisis as a scrophulous disease, when in my power I use Tonics & Roborants. But some here consider it as a Hæmorrhagia & consequently have practised frequent & large bleedings. But I imagine that scrophula may not only give rise to Tubercles, but render the blood thinner, & thereby bring on an Hæmoptoe. Tho' this may take place without a scrophulous Taint, yet from frequent Dissections of phthisical Patients, Tubercles are always to be expected.

Phthisis is always very variable in its duration; sometimes soon carrying off the patient in the Compass of a few weeks after the appearance of Hæmoptoe; & sometimes continuing for many years, the symptoms being always aggravated in winter & alleviated in the summer Season.

The disease has been known to be removed when proceeding from ulcerations in the Lungs, attended with Hectic, from absorbed Matter: but in general we can only pretend to palliate the symptoms & avoid occasional Causes.

Bleeding & Blistering are often necessary, & relieve even the scrophulous Causes; but one principal Trust is in Regimen & change of climate. Riding, Good Air, & Sailing, with the nausea which attends it, have a great share in alleviating the disease.

My Practice in this Patient was trifling, & may be called frivolous. I gave the mucilaginous mixture, to relieve the tickling Cough, & the Vitriolic Acid, to check the colliquative Sweats.

ODE TO SYPHILIS.

BY J. A. O'NEILL, M. D.

I.

Penis
Stainless,
Pimple
Painless.
Indurated at its base;
Bullet
Bubo,
Indo-
lento
Three weeks after the fall from grace.

II.

Pyrexia,
Cachexia,
Persistent
Anorexia,
Macules mottle the body o'er;
Glands
Erratic,
Signs
Lymphatic,
Six weeks after the primary sore.

III.

Periostitis,
Synovitis,
Faded macules symmetrically placed;
Alopecia,
Chancre
Easier,
Ere roseola's quite erased.

IV.

Mucous patches,
Cicatrix matches,
Rupial ulcers 'round each knee;
Pains nocturnal,
Gummata
Internal,
Two years after that fatal spree.

V.

General paresis
Speech embarrasses,
Maudlin sorrow soon brings tears;
Pupil discloses
Spinal sclerosis,
Tabes dorsalis in later years.

118 WEST 84th STREET, NEW YORK CITY.

Editorials.

The Albany Medical College.

The College began on Tuesday, September 28th, its sixty-seventh session, under especially auspicious conditions. The faculty address was delivered by Dr. F. C. Curtis, Professor of Dermatology, to a large class in the presence of the faculty and many alumni.

The changes in the faculty have not been numerous, but will all make the course of instruction more thorough and comprehensive. Dr. George Blumer, who has for the past year been Director of the Bender Hygienic Laboratory, becomes adjunct professor of histology, pathology and bacteriology. He has just returned from Munich and Vienna, where, for the last six months, he has been making special researches in nervous and comparative pathology. Dr. Lartigau, the assistant at the Bender Laboratory, has been appointed lecturer on clinical microscopy, and Dr. Robinson lecturer on electro-therapeutics and the use of the Roentgen rays.

A very complete electrical apparatus has been placed in Alumni Hall under the direction of Dr. Hailes, and will be used for illustrating lectures on histology, pathology, bacteriology and Roentgen-ray photography.

The division of the senior class in small sections for practical clinical work, which has, during the last two sessions, shown its very great value, will be still further amplified.

The College will begin with this session its four years' course for graduation, although the law does not go into effect until January, 1898. An amendment to this law permitting advanced students to graduate in three years failed last winter from want of the Governor's signature to become a law.

Some Strange Remedies.

Dr. Leopold Fischer, in the *Wiener med. Wochenschr.* (1897, No. 8), mentions briefly some of the methods of treatment in use in the fifteenth, sixteenth and seventeenth centuries, but considers more thoroughly a work that appeared in Frankfort in 1701, of 850 pages, entitled "A Good and Careful Medicus," by Dr. Johann Helffrich Jüngken, "hospi-

tal and garrison physician, as well as city physician of the world-renowned free city of Frankfort-on-the-Main." In this book he warned the public against the doctrines of the old women and sorcerers, and recommended only remedies which he knew from his own experiments to be of value. As, for example: "Sores of the lips could be cured if the oil or fat which runs out when a wooden cook spoon is held over the fire is applied to the sores."

The paralysis resulting from cerebral hemorrhage is cured by rubbing on salves externally, as "an ointment made up of soap, the gum of the pine, human fat and powdered human bones." For inflammatory swellings of the nasal mucous membrane, a salve of dried finely powdered deer manure and oil of rose. For nose bleed, "a solution of dead frog and alum. Cloths are soaked in this and placed on the forehead. For toothache, if the usual remedies did not work, and if the ache frequently recurs, "find a birch tree, split the bark, cut a piece of the wood from the tree, sharpen this, and jab it into the offending tooth until it bleeds. Put this bloody piece of wood again back into the tree, and replace the bark. The toothache will gradually disappear and will not return."

For jaundice, "fasten a live fish, preferably the 'Schleye,' around the body or against the soles of the feet, and let it die there." This is a sure cure. Or, "take the urine of a patient who has jaundice, several passages being allowed to collect, pour this over oak ash, and make little balls of the mixture. Place these on some dry spot in the room or near the fireplace." As soon as these balls are dry the jaundice will have disappeared. Another very excellent remedy was "to make little pancakes of the patient's urine and flour, and give them to a cat to eat."

Dr. Ettmüller, who practiced medicine from 1644-1683, professor of medicine in Leipzig, and one of the most renowned physicians of the day, advised for the same disease that a soup should be made of the urine of the patient, milk and wheat bread, and given to a dog. If the dog did not die, then it would also be good for the patient. For menorrhagia (by the same author), "spread a cloth with pig manure, warm it and apply over the uterus."

For hydrocele, applications of a mixture of goat manure, crushed snails, powdered sulphur and kümmel were made.

Incontinence of urine can be perfectly cured if " a live crab is burned to ashes in a new jar (the jar must be new), and the powder hung around the neck in a little bag."

Of the internal medicaments that Jüngken recommended, the following are noteworthy:

" Powdered coral and crabs' eyes, drunk with something (as wine), were good for ' stomach ache,' but it was better for this to add powdered crystal, mother of pearl and mussels."

Mania is completely cured by feeding the patient " the brain of a dog (of one color), cooked.

For kidney stone, " Keller-Eselgen " are moistened with Spanish wine; this is then dried and powdered and the powder drunk in elderberry wine. This is also good for asthma.

For retention of urine, you also give " Keller-Eselgen " rubbed up with white wine. For dropsy, " tincture millepedium." For cramps, " a drink of powdered human bones, coral, amber and pearl in black cherry water." This is also very good for " palpitation of the heart " if a little powdered crab shell is added.

For epilepsy, powdered human skull was given, " but it must be the skull of a person who has died a violent death, who has either been hung or decapitated." For " inflammation of the throat or lungs, pleurisy and ' colic,' " " horse manure in cammeline tea " was warmly recommended, particularly for the poorer classes.

For goitre, Dr. Jüngken recommended, above everything else, the " Kropff-Schwamm " (ordinary sponge). This is nicely toasted and given the patient regularly, but it must only be taken when the light is diminishing, as by moonlight, care being taken to thoroughly purge the patient every week.

He also advises the following: " A pike weighing a couple of pounds is decapitated a few days before full moon. The fish is put in an open jar, together with a large sponge; over this the patient pours, for three consecutive mornings, his urine. Then the jar is sealed up, placed over a slow fire so that the urine cooks slowly. The fire is then increased and the contents of the jar burned to ashes. This is then taken out, powdered, and a ' maas ' of the best wine poured over it. A good drink of this is taken every morning soon after full moon and continued to

new moon. And again, "Whoever can drink his own urine has by no means a poor remedy to "drive away" his goitre.

For "excessive menstrual flow," a mixture of pig or mule manure and myrten syrup is given." This is a sure cure.

As Jüngken states, "he has used this remedy in the case of a poor woman who had been flowing continuously for five years, and with God's help it cured her."

Scientific Review.

The Left Inferior Posterior Cerebellar Artery. — In the *New York Medical Journal* (*April* 17, *May* 1 and 8, 1897), Dr. Hun reports a most instructive case of analgesia, thermic anæsthesia and ataxia, resulting from foci of softening in the medulla oblongata and cerebellum, due to occlusion of this artery, with a study of the sensory and co-ordinating tracts in the medulla. A complete report of the pathological findings is also given by Dr. Van Gieson, the whole constituting one of the most valuable contributions of the year to medical literature. There were three foci of softening. One was situated in the most lateral portion of the left side of the medulla at the midolivary level; a second lay in the ventral portion of the midpontial level on the right side; the third damaged quite thoroughly the left corpus dentatum cerebelli. These foci resulted from atheroma of branches of the vertebral and basilar arteries. The focus of softening in the medulla was an almond-shaped mass lying in the peripheral and left lateral portion, between the dorsal border of the lower olive and a horizontal plane passing near the fasciculus solitarius, destroying the outer half of the formatio reticularis, the descending root of the fifth nerve, the direct cerebellar tract, the column of Gowers, and fibres passing between the cerebellum and the lower olives. The focus in the pons lay between the entrance of the fourth and fifth nerves, principally on the right side, destroying a considerable portion of the pyramidal tract, fully one-half of the right side, and a few of the dorsal and median pyramidal fibres of the left side. In the cerebellum the left corpus dentatum was involved.

The degenerations resulting from these lesions were as fol-

lows: The descending root of the fifth nerve, the corpus restiforme and the most lateral of the internal arcuate fibres, the anterior pyramids, the ventral portion of the rhaphe, the nucleus arciformis, and the external arcuate fibres which pass from the cerebellum through the corpus restiforme to this nucleus. At a lower level the trigeminus root was completely blotted out. In the lateral white column there were scattered bundles of degenerated fibres, as also in the left anterior horn. At a level of the entrance of the cochlear nerve the columns of Gowers and Flechsig were completely destroyed, as were the fibres passing from the posterior columns to the corpus restiforme. These pathological results may be summarized as follows: The pons lesion destroyed the dorsal half of the right pyramidal tract and a few of the fibres of the left pyramidal tract. The medullar and cerebellar lesions destroyed on the left side the antero-lateral ascending tract of Gowers, the direct ascending cerebellar tract of Flechsig, the descending cerebellar tract of Marchi, the descending root of the fifth nerve, and the greater part of the nucleus ambiguus, the motor nucleus of the glossopharyngeus and vagus nerves.

The clinical symptoms observed were as follows: A man, 53 years old, without any known cause and with only the premonitory symptoms of a slight numbness of the right leg, suddenly experienced the sensation of a lump in his throat accompanied by absolute inability to swallow and slight difficulty in speaking; at the same time he felt tingling in the left side of the face spontaneously and in the right arm and leg following slight friction; and this sensation was accompanied by absolute analgesia and thermic anæsthesia in the same areas, without a trace of tactile anæsthesia anywhere on the body. Similarly, smell and taste were not affected, but analgesia was present both on the left side of the tongue and in the left nostril. In addition to these symptoms there were extreme ataxia and complete loss of muscular sense in the left arm and left leg, without any other motor disturbances. There was also increased secretion of sweat on the right side of face and the right hand. Two months later, coincident with an improvement in some of the symptoms above enumerated, he suffered from a second attack, manifesting itself in a sudden loss of strength, especially in his legs

(a symptom which had not been marked in his first attack), and after this second attack his knee-jerks, previously normal, became greatly exaggerated, and ankle clonus, previously absent, became well marked. There took place in the course of time a more or less complete recovery, as regards the power of deglutition and of muscular sense, and as regards the analgesia of the right arm and leg. The ataxia continued and was associated with an ever-increasing weakness, and finally with slight delirium and loss of mental power, and he died about four years after his first attack.

In this case there is a clear clinical history of two separate attacks of cerebral disease, the first causing purely sensory, the second purely motor, symptoms. It is therefore evident that all three foci of softening did not occur at the same time, but that the focus of softening in the medulla, causing sensory symptoms, occurred first, and that the focus of softening in the pons, causing motor symptoms, occurred two months later. There is nothing in the clinical history which establishes the date of the focus of softening in the cerebellum, but, inasmuch as it lies quite close to the focus of softening in the medulla, it is not improbable that both regions are supplied by the same arterial trunk, the inferior posterior cerebellar artery.

The following explanation of the symptoms in detail is given:

Analgesia and Thermic Anæsthesia. — The nervous impulses giving rise to painful sensations are conveyed to the cerebral cortex by the sensory fibres and tracts, and there can be no doubt that the analgesia of the left side of the face was due to the destruction by the softening in the medulla of some portion of the sensory tract connecting the left side of the face with the cerebral cortex, and a portion of this tract — the descending root of the fifth nerve — was included within the softening. This case makes it very evident that the fibres of the fifth nerve, after leaving the Gasserian ganglion, have distinct functions, and that all those fibres which convey impulses for painful and thermic impressions, after entering the pons, turn downward and lie in the descending root. The analgesia and thermic anæsthesia of the right arm, the right leg and the right side of the body have a somewhat different causation from those of the left side of the face, in that they are due to a lesion of the

secondary (central), not of the primary (peripheral), neurones. The fact that the analgesia and thermic anæsthesia of the left side of the face were due to a lesion of a primary (peripheral) sensory neurone, while the analgesia and thermic anæsthesia of the right arm and leg were due to a lesion of a secondary (central) sensory neurone, makes a great difference in the prognosis. In consequence of the numerous branching processes of the cells of the posterior horns, and of the branches given off also from their axons, it is possible that even when the impulse can no longer pass along these axons, it can still pass by some of these collateral branches, and thus reach the cerebral cortex by indirect channels, and the oftener these indirect channels are traversed by the impulse the easier the passage becomes. *Retinal Analgesia.* — This could not be brought in connection with any possible distribution of filaments of the fifth nerve to the retina, nor with the lesion, and was regarded as functional. *Tingling.* — This symptom was associated with lesion of the tract for conduction of painful impressions, and not with that for conduction of tactile impressions. *Loss of muscular sense.* — Loss of muscular sense existed on the same side of the body as the lesion in the medulla, and was due to the interruption by the focus of softening of the fibres of the uncrossed direct cerebellar tract, or tract of Flechsig. *Ataxia.* — The explanation of this symptom is reached by exclusion, and it is of necessity referred to the destruction of the descending cerebellar tract of Marchi. There has been a great deal of investigation and much difference of opinion in regard to this tract during the past few years, and the examination made by Dr. Van Gieson adds a strong proof to the certainty of its existence. He finds that in consequence of the destruction of the left corpus dentatum, there is a descending degeneration of a tract of fibres passing downward through the left corpus restiforme, in part to the stratum zonale of both of the greater olivary bodies, and in part through the formatio reticularis, and through the anterior and lateral columns on the left side of the spinal cord to the anterior horn of gray matter. The tract of Marchi is regarded as certainly existing, and as consisting of fibres conducting impulses for muscular co-ordination from the cerebellum and running downward in the spinal cord along with those fibres which convey impulses for volun-

tary motion from the cerebrum, and it is to the destruction of this tract of Marchi that the ataxia in this case was due. *Fixed attitude.* — No explanation of this symptom can be given further than that it may have been due to faulty information in regard to the position of the body, and that, like the tingling, it may have been a symptom of sensory irritation. *Difficulty of speech and deglutition.* — These symptoms were mainly paralytic, and were doubtless due to the almost complete destruction of the left nucleus ambiguus — the motor nucleus of the glossopharyngeus and pneumogastric nerves. *Increased secretion of sweat.* — A bilateral dominant center for the secretion of sweat is now generally recognized as existing in the medulla. It is probable that this center on the left side of the medulla was involved in the lesion, and that the center on the right side was consequently stimulated to excessive activity.

The symptoms, in addition to these described, were hemiplegia, delirium and mental failure, and a few symptoms which seemed to have no connection with the lesions found at the autopsy. As far as possible, almost all of the prominent symptoms present have been explained by the lesions found in the medulla, the cerebellum and the pons; the permanent facial analgesia and thermic anæsthesia by the destruction of the descending root of the fifth nerve; the temporary hemianalgesia hemithermic anæsthesia by the destruction of the ventro-lateral ascending tract; the temporary loss of muscular sense by the destruction of the direct cerebellar tract of Marchi; the tendency of the left arm to move into the plane of the body and of the body to fall to the left side, by the lesion of the corpus restiforme, or of the inferior cerebellar peduncle; and the hemiplegia, or rather partial paraplegia, by the lesion of the pyramidal tracts. Although there remain obscure and unsolved problems in the case, it still possesses much interest as throwing clinical light and confirmation on some facts in the anatomy and physiology of the medulla and pons, which had been acquired for the most part only by anatomical, embryological and experimental research, more especially with reference to the descending cerebellar tract of Marchi and to the course of the descending branch of the vestibular nerve. Not the least interesting side of the case is the clinical evidence that it gives in

confirmation of our later anatomical ideas concerning the nervous system and of its essential element, the neurone, and of the collateral channels of transmission which the branching central neurones offer to the nervous impulse. The difference in the permanence of the sensory paralysis due to a lesion of a primary sensory neurone from that due to a lesion of a secondary sensory neurone has not been previously proved, and is certainly of great importance in prognosis. Finally, the case appears to present a complex of symptoms which, when present, will justify the diagnosis of occlusion of the inferior posterior cerebellar artery.

State Medicine.

EDITED BY HARRY SEYMOUR PEARSE, M. D.

Idleness and Insanity in Prisons: An Answer. — In the issue of the Journal of the American Medical Association for July 31st, there appears an editorial on "Idleness and Insanity in Prisons," which is based on a clipping from a newspaper. We regret that the Journal has been led astray by an article, the statements of which are not in keeping with the facts, and which was published either for political or sensational purposes. The press dispatch stated that "since the anti-convict labor law went into operation on January 1st, last, twenty convicts in the Kings County penitentiary had lost their reason, that nine went mad in one week in July, five of whom were sent to Matteawan in one day, also that during the first seven months of 1896 nineteen lost their reason." The true statistics, given by the secretary of the State Lunacy Commission, do not bear out these statements. As a matter of fact eleven patients were committed from Kings County penitentiary to Matteawan from January 1st to August 1st, 1897, and but two during the entire month of July, instead of five in one day. The entire number admitted to Matteawan from all the penal institutions in the State was only eight; nine were committed from October 1st, 1895, to October 1st, 1896, instead of nineteen during the first seven months of 1896 as stated in the dispatch. Other assertions are similarly exaggerated.

On the strength of these statements the Journal has indulged in rather a forcible denunciation of our anti-convict

labor law. We are constrained to disagree with the writer, and view the law as a just and humanitarian measure, rather than think it neither " justifiable nor respectable."

In the first place there are other people in the world to be considered besides criminals; the hard-working class for instance, the members of which are willing to be law-abiding citizens and to support the government, rather than to be a menace to it. The side of legitimate labor can be viewed in a humanitarian light as well as that of the criminal, and the interests of the former should be paramount to those of the latter. Let us not be understood as holding the view that because a criminal is an enemy to morality and mankind, that he should be tortured and no effort made to reform him; on the contrary it is our duty to reform him if possible, but let it not be done to the detriment of the free man.

There are abundant proofs to refute the statement that idleness and confinement are prolific causes of insanity in prisons. Dr. M. V. Ball, formerly physician to the Eastern Penitentiary of Pennsylvania, says: " Most of the cases of insanity found in prisons are not the result of confinement, but the cause of confinement." In the last report of the Elmira State Reformatory, Kiver is quoted as saying, that, " The age of the majority of reformatory inmates and consequent tendencies to the neural disorders of adolescence, the nervous instability and mattoid tendencies of many that formerly found expression in roving lives, characterized by an absence of application and effort along legitimate lines of livelihood, under the routine and methodical living incident to imprisonment, and the withdrawal of the stimulus of change and excitement, the concomitants of former living, operate to bring into the foreground and greater prominence latent or suppressed mental defects." Thus he has attributed insanity in the reformatory class to the same cause that Dr. Ball attributed it to in the class of general convicts, namely, a deficiency in mental or moral responsibility.

The reports of the State Reformatory show that insanity has gradually increased in that institution notwithstanding the fact that the men are occupied constantly and seldom confined to their cells. Dr. Hamilton D. Wey, the physician of the institution, in commenting on the report for 1896, says, " By this report

you will notice that while industries were in progress here last year, there was, nevertheless, a tidal wave, so to speak, of insanity, that spread over the place, there being twenty-three or twenty-four transfers to the Matteawan State Hospital. Why the insanity for this one particular year should be so greatly in excess to previous years, I am unable to state. I can only mention it as a fact. This year, on the other hand, with a larger net population and less work all around, the number of cases of insanity will fall in all probability fifty or sixty per cent. below that of last year." It has also been proved that insanity, speaking in a general sense, is on the increase, and there is no reason why criminals should form an exclusive class wherein no increase should be looked for.

It is unnecessary to say that we do not sanction idleness in incarcerated criminals any more than in the free and morally responsible man. It is known to be a factor, to a degree, in the production of insanity, though not nearly as strong as in the perpetration of crime.

Only on the principle that idleness in any being, an inanity of purpose or life, an absence of responsibility, is reprehensible, almost criminal in itself, can, we think, make convict labor justifiable. These convicts, either by inherited or acquired traits, are enemies to a moral civilization, and why should we be especially obligated to fashion their mental lives with ours. We are not morally obliged to give them work, that they may not suffer, but only to give them such occupation as is consistent with and necessary for their reformation. And let the criminal do that work which will conflict least of all with the interests of the man who, by his labor, contributes his share of the taxes which in part are levied to restrain that very criminal.

We have endeavored to justify our anti-convict labor law from both a moral and economic standpoint. In substance it provides that the convicts shall manufacture goods to be used in State institutions exclusively, and so not place convict and legitimate labor in competition.

It has been said by an eminent judge that our criminal laws were not sufficiently stringent, and that punishment in prisons was entirely too mild. It is not difficult to believe this when time after time men are committed for repeated criminal acts,

and when some appear before judges voluntarily and ask to be returned to prison.

Give our criminal a tolerable condition of mind if you can, let incarceration be for punishment and reformation and not a coddling process, put him in the way of becoming a good citizen if you can, but, we repeat, do not make the free man a martyr to the cause.

The Health Board of New York City. — In a recent number of the London *Lancet* considerable space was given to a review of the advance of medicine in the Victorian age. After speaking of the great strides made in pathology, microscopy, physiology, electro-therapeutics, the advent of serum-therapy, and the invention of clinical instruments to aid in diagnosis, it says that the "Victorian era has been characterized by the rise and development of sanitary science, the aim of which is to promote the public health through securing cleanliness of air, water, food and drink, the construction of dwellings on hygienic principles, the avoidance of over-crowding, and the practice of measures of isolation, the control of unhealthy occupations, and the better management of factories."

There is no room for doubt as to the truth of this statement. The underlying principle which controls pathological investigations and experiments is to discover the intricate morbid changes and conditions of the body cells as acted upon by bacteriological and other agents; and the natural corollary of this principle is the prevention of just such changes. Causes and effects go hand in hand, and modern science is now as energetic against the one as the other.

There is no stronger exponent of the principle of prophylaxis existing than the Health Board of New York City. It forms the keystone of its powerful arch. The board is composed of efficient and energetic officers, expert bacteriologists, chemists and inspectors, an excellent executive department, a superb working laboratory, and an admirable system of regulations. It issues numerous instructions to physicians relating to the isolation and care of contagious cases, with blanks for reporting them promptly; directions for making cultures of suspected diphtheria, and for the collection of sputum and blood for bacteriological examination. The cattle supplying milk to the city are

examined, as far as possible, for tuberculosis, and the milk as to its purity. It prepares the antitoxins and vaccine virus which it uses, and supplies gratis when used upon charitable patients. Its circulars of instruction to the poor in the tenement districts, relating to cleanliness, the care of the sick and infant feeding, are printed in several languages. There is a good system of disinfection and sanitary inspection. School children are regularly inspected for infectious diseases. The system of garbage collection has been improved — so we could go on naming almost endless workings of the department.

The stand which the board has recently taken against tuberculosis was vigorously assailed, but the opposition seems only to have strengthened its position.

It has been compelled to withstand the assaults which many progressive organizations have to meet. There are some who are so narrow that they oppose every reform or advance on principle, but they are speedily whisked aside and forgotten. The advance of science is too strong to check.

We have only commendable words for the energy of the board and for its methods, which are, in every way, up to the scientific standards of the hour.

Medical News.

THE ALBANY COLLEGE OF PHARMACY will begin its seventeenth session on Monday, October 4th, 1897, with an introductory lecture by De Baun Van Aken, Ph. G., Secretary of the Faculty.

— Profs. Tucker, Boyd and Blumer and Dr. Theisen, of the medical faculty, spent the summer in Europe.

— Profs. VanderVeer, Ward and Hun were in attendance at the meetings of the British Medical Association in Montreal. Prof. VanderVeer took a prominent part in the discussion on appendicitis.

MARRIED: WOODRUFF—HARDER.— At Philmont, N. Y., on Wednesday, September 1, 1897, Dr. Richard A. Woodruff (A. M. C., 1886) and Mrs. Luella Harder.

THE AMERICAN PEDIATRIC SOCIETY is making a collective investigation of infantile scurvy as occurring in North America, and earnestly requests the cooperation of physicians, through their sending of reports of cases, whether these have already been published or not. No case will be used in such a way as to interfere with its subsequent publication by the observer. Blanks containing questions to be filled out will be furnished on application to any one of the committee. A final printed report of the investigation will be sent to those furnishing cases.

[Signed].

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Committee.

— A book entitled "About Children" is announced by the Medical Gazette Publishing Company of Cleveland, Ohio. The author is Dr. Samuel W. Kelley, Professor of Diseases of Children in the Cleveland College of Physicians and Surgeons.

A NEW VILLAGE HOSPITAL. — The Glens Falls, Sandy Hill and Fort Edward Hospital Association, formed for the purpose of erecting a public hospital for the needs of the villages of Glens Falls, Sandy Hill and Fort Edward, has been granted a certificate of incorporation by the State Board of Charities. The directors of the Association are: Dr. R. Jerome Eddy, Dr. D. J. Fitzgerald, Dr. Thomas J. Henning, Dr. Fred. J. Hunt, Dr. David M. Hall, Dr. William M. Knapp, and Joseph A. Kellogg, of Glens Falls; Drs. H. C. Monroe and John T. Park, of Sandy Hill, and Drs. Silas J. Banker and Wm. B. Melick, of Fort Edward. Plans are now being made, a number of bequests have been received and the hospital will probably start soon on a very fair foundation.

— The seventh annual meeting of the New York State Association of Railway Surgeons will be held at Academy of Medicine, New York City, on Tuesday, November 16th, 1897, under the Presidency of Dr. J. Frank Valentine, Chief Surgeon of the Long Island Railway. C. B. HERRICK, M. D., Troy,

Secretary.

AMERICAN PUBLIC HEALTH ASSOCIATION. — The coming meeting of this association in Philadelphia from October 26th to 29th promises to be a memorable one. It will be the silver anniversary of the association, and the attendance and number of papers read will probably be larger than at any previous meeting. Philadelphia hospitality is proverbial, and visitors can be assured of a time replete with pleasure as well as profit.

An interesting feature of the meeting will be an exhibit of hygienic and sanitary applications, preparations, etc., including all articles capable of furthering or preserving public or personal health. Similar exhibits at the meetings in Brooklyn and Buffalo proved instructive and entertaining to the members and advantageous to the exhibitors. There will be an endeavor to make the coming one larger and more comprehensive than its predecessors. An entire floor of Horticultural Hall, said to be the finest exhibition hall in the country, has been devoted to this purpose.

Those who supply hygienic and sanitary appliances and preparations of value and interest should apply to the chairman of the committee on exhibits, Dr. Edward Jackson, 1633 Locust street, Philadelphia.

Book Reviews.

The Menopause. A Consideration of the Phenomena Which Occur at the Close of the Child-Bearing Period, with Incidental Allusions to Their Relationship to Menstruation. Also a Particular Consideration of the Premature, Especially the Artificial, Menopause. By ANDREW F. CURRIER, A. B., M. D. Pages, xvi, 309. New York: D. Appleton & Co.

In the preface the author speaks of the lack of recent literature bearing upon this subject, and shows the desirability of correcting various erroneous beliefs that have been handed down by some of the older writers.

In the following chapters he discusses the indefiniteness which has characterized the subject to a considerable extent, defines the meaning of the term menopause, and explains that the term comprehends not merely the cessation of the menstrual flow, but also includes all the various changes and phenomena, anatomical or otherwise, which accompany the "change of life."

He thoroughly disbelieves in the idea, as often expressed and popularly accepted, by many physicians even, that the menopause is a serious or critical time of life. He shows that such opinion has grown mainly out of the consideration of the few cases, comparatively, in which pronounced difficulties were present, leaving out of mind entirely the great majority

of cases which were normal, without any special symptoms worthy of note, cases which the physicians seldom see.

He also shows conclusively that there is not that intimate relation between the menopause and malignant disease, especially of the uterus and breast, which many have taken for granted. This conclusion is substantiated by a study of gynecological records from hospital and private practice.

The anatomical changes in the organs of generation which cause the menopause, and which are produced by it, or which accompany it, are fully described. Chapters follow, taking up in detail the various conditions, such as age, temperature, employment, habits and disease, which influence the approach or progress of the menopause; the symptoms of the menopause are detailed, and considerable attention is given the subject of premature menopause, both natural and induced, and the circumstances under which the latter is justifiable, or even demanded.

The final chapter, on treatment, recommends the management of symptoms by the means largely in common use, and particularly urges upon the physician the advisability of procuring an artificial menopause in suitable cases.

At the end of each chapter is added a full list of references to authors and works quoted.

As a whole, the book is interesting, and cannot fail to be of service to the reader, stimulating him to more careful and intelligent consideration of such cases. L. A. J.

Eye-Strain in Health and Disease. With Special Reference to the Amelioration or Cure of Chronic Nervous Derangements Without the Aid of Drugs. By AMBROSE L. RANNEY, A. M., M. D., Author of "Lectures on Nervous Diseases," "The Applied Anatomy of the Nervous System," etc., etc.; late Professor of Nervous Diseases in the Medical Department of the University of Vermont and of the Anatomy of the Nervous System in the New York Post-Graduate Medical School, etc. Illustrated with 38 wood-cuts. One volume, royal octavo, pages viii, 321. Extra cloth, beveled edges, $2.00 net. The F. A. Davis Co., Publishers, 1914 and 1916 Cherry street, Philadelphia; 117 West Forty-second street, New York; 9 Lakeside Building, Chicago.

The author is known as an ardent believer in graduated tenotomies for the relief and cure of a considerable proportion of human ills, and, as may be supposed, this volume is devoted principally to graduated tenotomy and the reports of cases cured by such operative procedure. The volume will meet with an enthusiastic reception from a number of readers, as evidencing the too hastily formed conclusions they have reached; while a large number of ophthalmologists will read it with considerable amusement. It is strange, indeed, that Dr. Ranney and a few other physicians obtain such universally successful results in the treatment of epilepsy by graduated tenotomies, while other competent practitioners meet with no such results. The variance makes a study of the cases reported by the author interesting reading, especially the chapter devoted

to the treatment of epilepsy. It is interesting without being at all satisfying. It is stated that in all these cases refractive correction was made and worn for a sufficiently long period before resorting to tenotomy, but the records are silent as to how long such refractive correction was used. In case three the refractive correction and the tenotomies were probably made upon the same day, and any unbiased critic reading the history of this case will arrive at the conclusion that there is no proof whatever that the tenotomies had anything to do with the temporary improvement, but will agree with what the author unwittingly arrives at in his comments found at the conclusion of the history, viz.: "Late in 1896 I investigated the progress of this case, and found that his parents had totally disregarded my instructions about keeping the glasses prescribed by me (sph. — 1.75 D. o. u.) upon the boy, and in spite of the protests from Dr. Stewart, and the oculist to whom I had referred them, they allowed him to relapse into epileptic idiocy." It would seem that the author believes that the refractive correction had far more bearing upon this case than the graduated tenotomies. Additionally, when the date of the operation, that of the letter from Dr. Marlow, and that of Dr. Stewart's letter are compared, and the statement concerning the progress of the case considered, the discrepancies are puzzling, to say the least.

There are many diseases where our methods of treatment for cure or alleviation are inadequate, and any improvement will be greeted with ready approbation, but it seems probable the near future will see the rapid decline of application of graduated ocular tenotomies for the treatment of epilepsy, insanity, constipation, chronic gastritis, etc., as set forth by Dr. Ranney. Typographically, the work is a credit to the publishers.

T. F. C. V. A.

Current Medical Literature.

A Contribution to the Resuscitation of Asphyxiated Infants. — Dr. W. Wolfram, in the *Centralblatt für Gynäkologie, March* 6, 1897, describes a method performed successfully by him and preferred to the methods usually employed. The child is laid transversely across the lap, so that the head hangs under the left thigh; the thorax is grasped with the left hand, the thigh of the child with the right hand, from behind, so that the thigh lies somewhat as if in a fork, made by the thumb and the middle and index fingers of the right hand; the thigh of the child is now lifted with the right hand, and an attempt is made to press it against the chest, so that the abdomen is brought under more or less pressure. At the same time the thorax is compressed with the left hand, which grasps it; as the thigh of the child is brought back to the operator's knee from this position, and the thorax is simultaneously released, an inspiration should take place. If the operation be repeated, an expiration is induced. This procedure was tried by Wolfram on a deeply asphyxiated child, and normal respiration followed in an hour; in another instance, normal breathing and the first cry followed in a quarter hour. This method is

a combination of Schultze's method (except that the position across the lap is substituted for the swinging motion) and the compression of the thorax with the left hand to reinforce the expiration, similarly to the procedure described by Prochownick. Wolfram recalls cases in which meconium has been demonstrated in the smallest bronchi, attributable to either intra-uterine breathing or artificial respiration. In the latter case it is frequently due to the centrifugal motion of the child, which is avoided by the position given the child in the procedure described by him.

A Case of Severe Salicylic Acid Poisoning.—Th. Klein, in *Wiener med. Wochenschr.*, 1897, No. 6, reports the case of a patient with acute poly-arthritic rheumatism, who, after the administration of 5.0 gm. salicylic acid, had the following severe symptoms: great ringing in ears and difficulty in hearing, severe headache, unconsciousness, maniacal convulsions, and Cheyne-Stokes respiration; pulse, 132; temperature, 36.3 C.; pupils contracted and did not react. There were nausea, constipation and retention of urine. Klein gave 5 gm. chloral hydrate in the form of a clysma, and a subcutaneous infusion of 500 cm. normal salt solution. The dangerous symptoms subsided. The urine, with its greenish color, albumen and blood, was similar to that in phenol poisoning. In three days patient recovered. There was no idiosyncrasy for salicylic acid.

An examination of the salicylic acid used showed that it was impure.

C. F. T.

The Asepsis of Bougies and Catheters.—Leven (*Deutsche med. Wochenschr., March* 4, 1897)[4] speaks of the difficulty of disinfecting the usual soft bougies and catheters covered with lac. They cannot be boiled for any length of time, nor placed in antiseptic solutions. L. has employed the following method for some time, and has found it perfectly satisfactory: He uses liquid paraffine, which, from the experiments of Neisser, has been shown to have an absolute aseptic, as well as an antiseptic action, not only keeping the instruments aseptic, but preventing a favorable soil for the development of micro-organisms that might get in from the air. Neisser has used it for some time for the syringes used for the injection of the salicylate of mercury. After the bougies and catheters have been used, they are first rubbed off with absolute alcohol, and then placed in a jar filled with liquid paraffine, large enough to entirely cover them. They can be left in this any length of time until used again, and are not injured by the paraffine. This must be renewed from time to time, and if the instruments are used very much, every day. It is unnecessary to oil the instruments before using, as the paraffine accomplishes this perfectly.

C. F. T.

Practical Therapeutics.

Chlorosis. — The essential part of the treatment is the administration of iron, and one great secret of success is to give sufficient iron. Personally, I have been most successful with Robertson's Blaud's pill capsules.

Unless there is any reason to the contrary, I begin with the No. 3 capsule, which contains the same amount of carbonate of iron as three Blaud's pills, and give one three times daily after meals, during the first week; during the second week, two capsules; during the third week, three capsules; and during the fourth and succeeding weeks, four capsules three times daily — equivalent to thirty-six Blaud's pills per diem. The iron should be continued in full doses until the hæmoglobin, as estimated by the hæmoglobinometer, reaches the normal amount. After this point has been attained, the iron should still be administered for several months in smaller doses — one No. 3 capsule, equal to three Blaud's pills, three times a day. If the plan of treatment described is faithfully and diligently carried out, there is rarely, if ever, any difficulty in curing the most severe and obstinate cases. I rarely fail to cure even the most severe cases in the course of two or three months. — *Byrom Bramwell.*

Treatment of Empyema. — Lewaschew (*Therapeut. Wochenschrift*, No. 26), on account of his success in the treatment of sero-fibrinous pleurisies by the removal of the exudate and the injection of a like quantity of normal salt solution, advocates the same measures in empyema, except in septic cases and where there are strong adhesions of the pleura. He removes the pus, washes the cavity with the salt solution until the fluid returns clean, and then leaves as much of the salt solution in the cavity as the pus removed. This operation will have to be repeated in five to ten days. Usually the third time effects a complete cure, though it may have to be done four to six times.

The advantages of this method of treatment are evident. The duration of treatment is very much shorter; there is no change in the shape of the chest; the pleural layers are not adherent, and the lungs are completely movable, elastic, and can be inflated to the greatest volume which they had before the illness.

Hæmorrhoids.— H. Adler, in *Semaine Medicale*, recommends the following:

℞ Ext. hamamel. fl.
Ext. hydrast. fl.
Tinct. benzoin. co., āā f ʒ iv
Tinct. belladon., f ʒ i
Ol. carbolizat. sat (5%), f ʒ i
M.

Purgative Iron Tonic.—

℞ Ferri sulph., gr. ij
Acid sulphur. dil., m xv
Magn. sulph., gr. xj
Aq. menth. pip., f ʒ i

M. Sig: This dose thrice daily.—*Saundby.*

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Original Communications.

THE RELATION OF MEDICAL STUDY TO GENERAL EDUCATION.*

BY F. C. CURTIS, M. D.,

Professor of Dermatology, Albany Medical College.

Gentlemen of the Medical Class of the Albany Medical College:

On the 20th of last April the last gathering of this body of teachers and students was held, on which occasion sixty of those who assembled here one year ago finished their established course of study, graduated from this institution, and joined the body of its alumni.

Now the revolution of time again brings us together to commence a new session — the fifty-ninth in point of years since the first was inaugurated in this same old amphitheater — and it devolves upon me, on my own part, for the second time performing this function, to fulfill the appointed and gracious task on the part of the faculty of welcoming you who come once more to place yourselves under the instructional resources of this venerable medical college.

In the Old World, where to the visiting American the antiquity of things is one of the most impressive stimulants to reflection, an age of but three-score hardly entitles an institution to sentiments of veneration; but here, in this young country, which measures its autonomous existence by but twice that length of time, and in which of necessity the refinements of edu-

* Introductory address delivered at the beginning of the session of the Albany Medical College, September 28, 1897.

cation have been secondary to those of the practical, this quality of age in an institution of learning is less exacting as to what shall constitute it.

By comparison with its own environment the college attains a measure of antiquity, since when it was incorporated in 1838 there were in this State only three medical colleges, of which but two continue to exist, the College of Physicians and Surgeons of New York and the Geneva Medical College, now removed to and a part of the Syracuse University.

And if we should extend the existence of this college back to its legitimate beginning in 1821, as a teaching force, when Dr. March commenced his course of lectures, there are now in the entire country but eight medical colleges in existence whose birth antedates that of this institution.

Age is an element of strength and a factor of its values in an institution of learning — the large body of alumni, among whom are still some aged men living of its earliest graduates, scattered over the country, filling places of importance in their respective communities, of whom no institution has better reason to be proud than this college has, is one of the acquisitions of a lengthy life. Time fits the institution into its legitimate place; adapts its working parts into harmonious operation; builds up a reputation and a clientelage of those who would enjoy the advantages it offers; enriches its resources for the accomplishment of its work. Prolonged life, if honorable, brings an emolument of respect and good reputation from its offspring and its associates; it also stimulates those who now carry it on to endeavors worthy of its past and of its antiquity.

The location of the college is in many respects to its advantage. A city the size of Albany, and central to a large surrounding area for higher medical service, while not commanding certain metropolitan resources, still has sufficient of instructional material to serve the purposes of a medical college. Our hospitals are capacious and full to overflowing, and the out-patient dispensaries have a good attendance. A very important addition to this part of the resources of the college is in process of attainment in the new Albany Hospital buildings which will soon be erected. This new hospital will be a model in its way, incorporating in its plan of construction, in a large and liberal manner, all that is worthy

of securing from the best and most modern hospitals now in existence, under the devoted supervision of the accomplished committee of its staff which has had in charge the formulation of its plans. It will be an object of pride to the city and the college, and is sure to add very much to our teaching resources. I have no doubt that some of the present class of students will receive part of their instruction in it.

A hospital plays a very important part in the teaching of medicine.

The Albany Hospital, the oldest in this city, was established forty years ago, and has had a most interesting history and been of large service to the work of the college and the good of the city.

Albany is in many ways an ideal educational center; it is central and accessible; it is on the great highway so as to be in touch with the world; it is large enough to be unprovincial; it is small enough and retired enough to cultivate thought undisturbed, and be free from commercialism; it is equipped abundantly with schools, general and technical, some of them the oldest in the land, with established reputation, large libraries, museums, and a favoring scholastic atmosphere; it is the chosen location for a university which should be the head and bond of union of all these qualities and equipments, and some of us hope the day is not distant when this may be.

The State of New York has made great acquisitions in its educational work within recent years — in its common schools, its intermediate schools and its technical schools. In no direction has more been effected than in that of medical education and in the legally established requirements for entry upon the practice of the medical profession. The practice-of-medicine law, secured after years and years of effort put forth principally by the representative body of the profession, the State Medical Society, has been added to and amended, and incidentally defended from the assailment of its opponents, till now, satisfactorily enforced, it assures for the future a grade and quality in the medical profession that will make membership of it desirable and enviable.

You have not been able to commence the study of medicine without first having obtained a general education of a fixed standard, and you will not be able to commence the practice of

medicine in this State until you have not only secured our degree, but have also passed an impartial State examination. We on our part have steadily pressed forward our requirements, in common with the other schools of this State, putting largely added work upon ourselves — and the more these exacting requirements have been emphasized the better the men and the more abundant the classes that have come to us and our New York schools.

I contrast these conditions with those under which, after college graduation, I myself began my study in the medical department of a large State University, and where I spent my first year.

The doors were wide open to whomsoever chose to come; he had but to register his name and pay his fee. There were five hundred of us, of a most varied assortment, a few cultivated men but a great number uncouth, illiterate, entirely lacking in suitable mental training to master and practice a profession. Manifestly many had left the ranks of the army, the war having recently ended, and casting about for an occupation had seized upon the ready one attainable by a couple of sessions in this institution.

It comes back to me as a lamentable recollection. Contrasted with the scholastic seclusion of college life it was like joining a horde of Philistines.

I am very certain that you who have gathered at the commencement of a studious session, some of you beginning your course of medical study and some with years of work accomplished — as you look forward to the completion of your self-appointed task, and to becoming yourselves a part of the medical body — would not have the conditions of entry to it other than they are. You realize in anticipation the honor of association with a guild whose respectability is assured by this process of selection, both of preliminary fitting and of technical training.

And I would like especially to emphasize the value of the preliminary mental fitting — its value not only to make more practical and accessible the acquisition of technical training, but its value too in raising the tone and essential character of our guild.

The time was, in this country, when this was not possible — when the means of securing it were too remote — when the field of work demanded more men than could be thus elaborately

prepared. A scanty preliminary training followed by a short drill in medical art, secured in some fashion, was all that was attainable.

We long ago passed that period, as no one will question — that utilitarian period.

And we have passed, too, that later period — not so very remote — when hundreds of young men who could hardly read or write, whose powers of reasoning and observation had scarcely been exercised in any orderly way, came to the medical schools and, after the prescribed three years of study and two sessions of lectures, joined the profession.

That good men developed and that the profession widened its knowledge and scope was not because the exactions to admittance were sufficient. It is evidence that medical practice is itself an educating force and that medical study is, to conscientious men, developing and elevating.

A well-planned system of education ought, however, to provide, as a basis to technical study, a foundation of mental drill along with which these good influences come. This education — and all education for the young — should develop a habit of *discriminating observation*, and by an orderly and logical system of mental athletics develop a trained intellect. It appears to me that it not so much *acquirements* as it is the *capacity to acquire* that we want in those coming to our technical schools. And this I take it is what is being aimed at in the development of the remarkably advancing science of pedagogy, from the fundamental kindergarten up through the succeeding grades. The new systems and new methods of the training of youth in recent years have been a source of wonder and interest to me as I have come in contact with them.

My own experience is that the trained man is the easiest man to teach, the readiest to learn. His habits of use of senses and faculties bring these into readiest play. The eye placed for the first time to the microscope or the ear to the chest apprehends but little — but if it has been habituated to carry impressions in an orderly way and the brain has been drilled to note and store what is brought to it, there is a modicum of delay in appropriating these new things which are brought to concern it, compared with the untutored and inexpert sensory and mental apparatus

of the untrained man. It takes less time for the man whose mental part of himself has been accustomed to work and has learned how to work, than for the man whose probation in the mental gymnasium has been short and the drill scanty, to take in the values of what is laid before him — a patch of morbid skin, a heart with diseased valves, the complicated facts of anatomy, or of physiology and pathology.

As a machine he is a more perfect machine and has a capacity for better work — work of a higher quality — more satisfactory.

The State law goes into effect this session requiring four years of medical study. It would appear that this is a short enough time in which to acquire proper training and sufficient knowledge to fit one to enter upon medical practice. There has been a vast addition made to the science of medicine — that which is known — in the last twenty-five years, and it will of necessity take time and capacity to acquire it. There is no place to-day for the incapable and the slenderly educated man in the profession of medicine. The size of the matter to be mastered determines that medical men of the future are to be men of larger calibre.

But the successful dealing with this large subject requires minds more deeply cultivated. Twenty-five years ago teaching was at long range — more expositional; now it is brought near at hand and facts are met at close quarters. Cultivated mental powers are needed to acquire ocular and mental skill, and all the lines of knowledge that bear on the subject.

I am so certain of the importance of the well-laid foundation of a thoughtful preliminary training to the man who is to take up this study of medicine — both to him as a student of medicine while an undergraduate, and afterwards when he continues to be one as he certainly must in post-graduate life — not only to him for its practical value for making him a trained machine to gather and digest facts, but also as developing an ethical and cultivated man mingling with men in his youth and later life, his mind trained to all the best uses of its higher powers — that, much as I appreciate the volume of material to be garnered during his medical course, I would advocate seriously the proposition to concede one of the four years now required by our State law for medical study to the men who have had the advantage of a preliminary course in arts, a college degree. An amendment to

the law to this effect passed the legislature last winter with the approval of the Board of Regents and of many thoughtful teachers of medicine and failed to pass the executive chamber. There is good reason why such a modification should be made, and I doubt not it yet will be.

There is not a lack of harmony between the work to be done here in the medical school and that in the curriculum of the college. From storing the mind with Greek learning, the creations of literature, the abstract truth of metaphysics and the facts of nature — to studying nature in this part of her domain is not necessarily an abrupt step. I do not see why the Greek spirit and culture need find itself away from home here. I would like, as the spokesman of this introductory occasion, to emphasize a statement and leave it on your mind as a thought worth keeping — a thought which, if it is allowed to possess your minds through the coming months, will add dignity and value to your occupation — will make its impress on your manner and life — and it is that the study of medicine is essentially refining and elevating and developing. If it has contracted a contrary reputation, it has been because uneducated, unrefined, irreverent men have unfortunately in the past filled the halls of the schools. It is unseemly that such should be the case, for there is no higher theme in the realm of nature; and perhaps this very refinement of the subject makes the crude, raw man more boorish when he comes familiarly into it. But it should rightly have an opposite effect, and will have on the man who has been familiarized to study and reflection. Your observation will bear me out in saying that generally the uncouthness, of which we have had examples in the undergraduate, fades away with the later contact with medical study and work. There are not many Bob Sawyers among the active practitioners of medicine.

All education should have an ethical influence. There should be no distinction between the classes of students whether they are pursuing courses devoted to intellectual development, or courses of technical study — no line of demarcation between the æsthetic and the utilitarian. Everything which is really useful is beautiful, and the study of the one as of the other should elevate the student in the way of right thinking and feeling. Real students are persons devoting themselves to the cultivation

of the understanding; and if the subject of their study is a worthy one and the method and aim of their work right, their influence on the scholar is ethical. Some education may be lacking in this. To train a man to be an adept in expression, to look for approbation for winning in debate on the wrong side, to make him willing to be other than sincere in what he advocates, is to make him valuable as a leader in politics perhaps, or as a defender of criminals but does not develop truth and rightness in him, nor tend to make him a good citizen even. It is a thing to be thankful for that there is no occasion for the cultivation of such artifice in the department of education you have entered, and that the subject of study is one that in no way fosters it, one that rather tends to develop in the student sincerity.

Our contact is with nature and natural forces, our investigation is into their facts and laws, not with arbitrary or unreasonable rules. Nature and the facts and methods of nature, so far as we come to learn them, admit of no ambiguity or circumlocution. Truth and the fact of things are identical. Elevating and truth-respecting tendencies should instill themselves into the moral fibre of him who studies these as his occupation. In its way the study of medicine has a worthy place in the field of education, and meets one of its fundamental aims. For if society to-day needs one thing especially it is honest thinking and sincere dealing — it is needed among the law makers, the managers of great enterprises, and likewise in the simple dealing of one man with another. Every community needs its example of this, not simply in its especially religious teacher who, it is taken for granted, will be such an example, but also its good citizen whose rectitude of thought brings rectitude of life, and who becomes a leader not because his counsel is wise only but because it is also genuine. No man has a better chance to play this part than the village doctor. I think it is the pride of the profession that many worthy examples of it exist, and without unduly magnifying my theme, I believe it is what should follow the right study of what goes to make up medicine.

It would be interesting to ask what motives prompt men to become students of medicine.

Many have told me that they were attracted by what they found attractive in the study of it. And I can understand how

this may be. To an eager student here is room for full scope and abundant stimulus. Some of the facts have been garnered by our predecessors and every day we gather new ones — new secrets of nature, new laws. We build our theories upon them and we let them fall when new facts upset them. The facts and the methods of nature are what we are continually after and are constantly finding. If we had in ALL the facts we should have a fixed science to teach and learn. You are studying in the rare field in which the educators are being always educated — in which those who teach must take time to learn. So we are all students.

To all of us of course the utilitarian motive of earning a living has been a motive for entering medicine. It is pretty certain that the faithful follower of our work is assured of a living, with which, as a matter of good philosophy, he should be content; but Plutus did not invent this calling for his followers.

There is recompense, however, beyond this utilitarian one, and every worthy son of Esculapius feels the value in it; in medicine the *lover of research* will have a mine to work in till all nature is an open book; the *lover of the beautiful* will have for his special study nature in her rarer forms and life in its most cunning operation; the *lover of his fellow-men* will have for his daily occupation the pleasing duty of giving all his effort to alleviating the ills of the body and being the good counsellor where sometimes no one else can minister; and I might say that he who loves adventure may find it in being always on duty to respond as a soldier to the hasty summons, or in the laboratory where Prof. Koch says he has often felt as if he were handling dynamite bombs.

I think it is more true than unsentimental men in the profession are ready to admit that all of these different sorts of motives actuate to some extent most physicians, and attract those who seek to enter the profession.

The ideal lives beautifully delineated in fiction you can find in the common real life, though, perhaps, the hero would be the last one to recognize it, and the instigation to them lies in the very nature of your chosen vocation.

It is well enough on occasions to idealize our profession; also to have each a lofty ideal for his part in it. I am sure it is also

well in the plodding realities of life to remember to work for work's sake, to find satisfaction in the actual doing.

You are entering a profession which, in a century of progress, has a wonderful headway. You will not appreciate till in leisure moments you glance back for no more than a quarter of a century what its rate of progress has become. The men who come into it to-day ought to realize what the generation before has done, and be inspired by the opportunity of joining so vital a work.

We have had our summer holiday with nature. Let us now with invigorated bodies and rested minds enter on fresh work with good heart.

17 WASHINGTON AVENUE.

A CASE OF ACUTE LIENOMEDULLARY LEUKÆMIA.*

BY HOWARD VAN RENSSELAER, PH. B., M. D.,

Associate Professor of General Medicine in the Albany Medical College.

Typical examples of leukæmia are of sufficient rarity to merit recognition and discussion from time to time at medical meetings; so that the case which I have the pleasure of reporting to you this evening is presented with the double purpose of putting on record a well-marked case of a comparatively rare lesion, and also with the hope of arousing discussion and interchange of opinion regarding this disease. But little attempt will be made to show anything especially unusual in the case as observed, although there are several features connected with it that are interesting.

Speaking of the rarity of leukæmia, it is known that while it is always an uncommon disease, yet it seems to be more prevalent in some localities than in others; thus the place where it has been most frequently observed is in Heidelberg, Germany, where it has been noted nine times in ten thousand consecutive persons who had entered the hospital; while, as the other extreme, there has been but one case recorded in Barcelona, Spain, in sixty thousand patients who have been admitted into institutions there.

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* Read before the Medical Society of the County of Albany, January 20th, 1897.

In America, statistics as regards the distribution and frequency of the disease do not seem to have been published, but the proportion of cases probably lies between the extremes just mentioned.

In the records of our two principal hospitals in Albany I have been unable to find any instance of the disease reported.

The main facts in connection with the following case are as follows:

C. S., aged 29; single; a Syrian by nationality, and a peddler by occupation. He was admitted to St. Peter's Hospital on November 21st, 1896. No morbid family history could be elicited. He denies any venereal disease, and never uses tobacco or alcohol in any form.

Of his past medical history, he remembers that years ago, in Syria, he was bled by native doctors, the scars over the veins still remaining, for some slight illnesses, the nature of which he does not remember.

His occupation has entailed considerable exposure, and during the past three winters he has had some chills, followed by fever, for which he never consulted a physician. In February of this year he was treated for boils in the City Hospital, where they were lanced; no leukæmic symptoms were at that time manifested. For the past year or more he has had from time to time nose bleeds; he easily loses his breath on exertion, and is readily tired. He complains that his eyesight is poor.

Two months ago he was struck on the right chest by a wagon, and dates his present illness from then. A short while ago he developed a cough, with expectoration, and some looseness of the bowels, and he lost his appetite; he does not sleep well, has headache and dizzy attacks, and complains of weakness, and feels unable to continue his occupation as peddler during the coming winter.

On physical examination we found the man well nourished. His weight, in spite of his diarrhœa, now by our own scales is 138 pounds, which is about the same as he weighed last summer. His skin, though of the dark color of the Armenian race, is decidedly anæmic; the lips are colorless, and the serous surface of the lower lid is pale. There are no signs of œdema; the respirations are rapid, averaging 36, and his breathing is evidently labored.

These respiratory signs are partly accounted for by a moderate degree of loose cough, with the white, frothy expectoration commonly seen in bronchitis. Microscopic examination of the sputum was negative, both as regards tubercle bacilli, and also elastic tissue; palpation was negative; percussion of the lungs showed anteriorly on the right side that the liver dulness begins in the fourth intercostal space instead of the fifth, and posteriorly on the left side dulness begins two inches below the angle of the scapula, instead of a hand's breath, as it is on the right side. On auscultation, coarse, moist rales were heard on both sides of the chest.

The body of the heart causes a pulsation over the upper part of the cardiac area, but the apex is not visible; there is no thrill, and the heart, by percussion, is not enlarged. Auscultation reveals the apex in the fourth intercostal space just to the left of the nipple; there are no abnormal valve murmurs. There is a well-marked anæmic bruit in the neck on the right side.

The belly is large and protuberant, especially in the upper part of middle line and on the left side; the skin looks tense here. The superficial veins on this side are markedly prominent and tortuous, and are somewhat enlarged also over the hepatic area.

By palpation over the left side a hard, smooth, resistant mass is distinctly felt. On deep pressure the free border, which is overlaid by intestines, can be detected four inches to the right of and below the umbilicus; a notch, feeling like the hilus of an enlarged spleen, can be felt above the umbilicus. By auscultatory percussion this enlarged spleen is found to measure thirteen and a half inches in its longest diameter and ten and a half inches vertically in the mammary line.

The liver is also enlarged, extending from the fourth intercostal space to about four inches below the free border of the ribs, its vertical diameter being, in the nipple line, eight inches.

The shin bones are not enlarged, nor are they tender; there is some soreness of the chest on coughing, which is believed to be muscular, as pressure on the sternum and ribs is not painful.

No enlarged glands in any part of the body can be detected. The tongue is moist and coated with a thick white fur.

The vessels in the neck pulsate noticeably; the pulse is regular, rapid and of low tension.

The eyes were examined by Dr. Van Allen, who reports the pupils equal, responsive to both light and accommodation; extrinsic muscular movements normal, save that the upper lids droop considerably; they seem somewhat œdematous. Media clear in both eyes; ophthalmoscopic examination: O. D.: The color of "fundus reflex" is of a light orange; the complexion, hair, etc., would lead one to expect a dark red or reddish-brown appearance. The optic disc shows some œdema, and this, extending for a short distance into the retina, blurs the disc margins. The retinal arteries are rather small; veins a trifle enlarged. The arteries and veins are indistinguishable by any usual difference in color, but only by their conformation. The vessels are nearly the same color as the choroidal background; have lost any distinct "bright line" along the summit of their calibre. Careful focussing shows a few hemorrhages along the courses of the vessels, but they are not numerous. Choroidal pigment seems abnormally lacking. One interesting point is noticed in the lower portion of fundus; a blotch of pigmentation can be seen through a retinal vessel, showing how extremely transparent the blood column is. The O. S. shows much the same condition, save there are no hemorrhages noticed, and there is less neuro-retinitis.

The urine was 1022, amber, acid; no albumin nor sugar; uric acid crystals abundant.

The patient, on account of the painful enlargement of the abdomen, was admitted into the hospital on the surgical side. After a number of days the above physical examination was made, when he was promptly transferred to the medical side. His blood was then also examined, and very marked leucocytosis was found.

On November 28, when the treatment of his blood condition first began, he was given Fowler's solution, m. x, t. i. d.

Up till that time, *i. e.*, during the first week in the hospital, he had been treated for bronchitis and diarrhœa, together with local hot packs to relieve the abdominal pain.

The bronchitis had run a moderately severe course, with a morning temperature varying between 100° and 101°, and with an evening exacerbation slightly exceeding 103°.

The diarrhœa did not begin until he had been in the hospital four days, but then began and was intractable to treatment.

During the second week in the hospital his bronchitis lessened and his fever steadily declined, so that by the end of the second week the morning temperature was but little above 99°, and the afternoon rise was between 100° and 101°.

In spite of the amelioration of his cough and temperature, his pulse and respiration remained rapid, the former never being below 100, and rising frequently to 120, while his respirations were habitually above 35.

His diarrhœa in the meantime had become very troublesome, he having from four to seven movements a day. For the frequent stools he was given a powder containing opium, tannic acid and bismuth, in fairly large doses, but without any appreciable effect.

Twice in this week he had some night sweats.

He also had for the first time a moderate nose bleed.

Microscopical examinations of the blood were carefully made each week by the house physician, Dr. Shaw.

The blood as withdrawn from the ear was much lighter in color than normal, and flowed very freely, with but little tendency to coagulation.

The hæmoglobin was estimated by the Fleischl hæmoglobinometer, and the corpuscles were counted under the microscope by means of the apparatus of the Zeiss blood-counter.

The first examination showed that the hæmoglobin was but 40 per cent. of the normal; and that the red blood corpuscles were reduced from 5,000,000 to 2,790,000, *i. e.*, but very little more than one-half of what they should be; but the most marked change was in the white corpuscles, which were enormously increased, they numbering 1,095,000, whereas they should be present in the amounts of from five to ten thousand per cubic millimeter.

The relative proportion, instead of being as it should, one white corpuscle to from 500 to 1,000 red corpuscles, is, in this specimen, found to be in the relation of 1 to $2\frac{3}{4}$.

Careful microscopic study of the individual blood corpuscles showed that there were several varieties of white cells.

There was no pigment in any of the cells, and the amœboid movement was very sluggish.

The myelocytes were by far the most abundant of the white corpuscles; next in frequency were the eosinophiles, while the mononuclear cells showed but a slight relative increase; the lymphocytes and the polynuclear cells were in about the right proportion.

A few nucleated red corpuscles could be seen, but they were not abundant.

During the third week his bronchitis entirely disappeared, and his temperature became normal and remained so.

His pulse and respiration, while not so high as the previous week, were still abnormally rapid, the former being for the most part between 90 and 110 and the latter from 30 to 36. The dyspnœa was also well marked. Nothing in the lungs or heart could be found to account for these symptoms.

His diarrhœa in the meantime was getting worse, in spite of treatment, he now having from six to ten movements a day.

The medication for his diarrhœa was changed, and he was put on aromatic sulphuric acid, m. xv, every three hours; after a couple of days this was again changed, and he was given compound chalk mixture and blackberry brandy.

During this week he also had slight nosebleeds; he sweats considerably during the afternoon and night.

He does not sleep well, and his appetite is poor.

Two new symptoms have now developed. The first is priapism; the erection comes on every time he passes water or goes to stool, and lasts from five to ten minutes; it is not especially painful.

The other symptom is tenderness on pressure over the tibia. This is the first time that soreness of the shins could be elicited, though it had been repeatedly sought. By the end of the week his sternum was also tender when gently tapped.

The anæmia continuing, he was ordered tincture of iron, 15 mimins after meals.

His blood was examined again carefully this week. It was found that the percentage of hæmoglobin had increased from 40 per cent. to 45 per cent.; that the red globules remained of about the same number, whereas there was a marked increase in the number of white corpuscles, they having increased from 1,095,000 to 1,240,000.

For this reason his arsenic was gradually increased to fifteen drops, and he standing this dose well, it was further pushed to twenty drops, t. i. d.

Physical examination of the abdomen shows a decided and gratifying subsidence in the size of the spleen, the right border of which now can be felt one inch to the left of the umbilicus, where before it was one and one-half inches to the right of this mark. The lower border is also higher by about two inches than at the last examination.

During the fourth week his pulse and respiration still further declined, his pulse being in the nineties and the respirations between 24 and 30.

His diarrhœa continuing, the medication was again changed, and he was now given a powder composed of ten grains each of tannigen and subgallate of bismuth, under which his stools became less frequent, being now three or four times a day. Slight œdema of the legs; in fact, a very slight general anasarca is noticed.

His general condition seems improved, though the diarrhœa and fever have pulled down his weight five pounds since he entered the hospital.

He occasionally has a nosebleed.

His tibia, sternum and ribs are much more tender than before.

His mouth is dry, and he is thirsty, but somewhat capricious about his food.

He does not seem so anæmic.

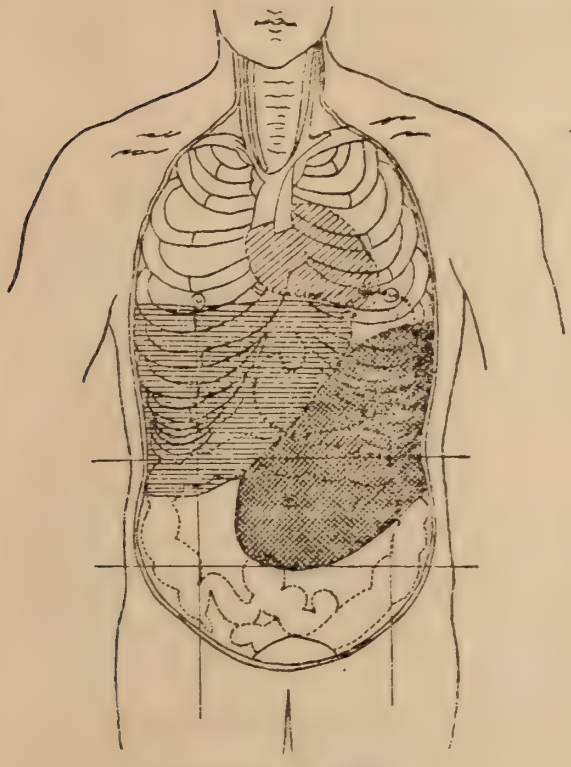
Examination of the blood shows a remarkable improvement in every respect. The percentage of hæmoglobin has risen from 45 to 50, the red corpuscles from 2,600,000 to 3,568,000, a gain of nearly a million, while the white corpuscles have fallen from 1,240,000 to 850,000, a diminution of about 400,000, the proportion between white and red now being one to four and a fifth.

Physical examination of the spleen shows a degree of subsidence in the size that is as unexpected as it is gratifying.

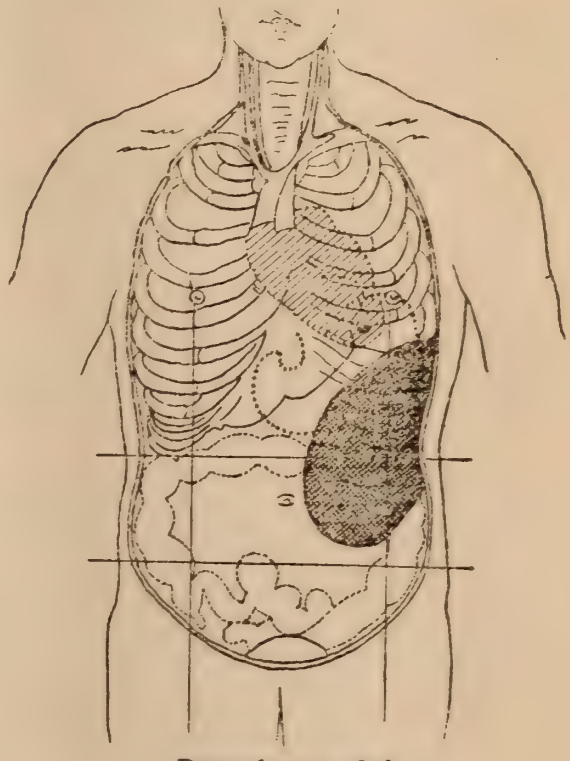
The right border is now full four inches to the left of the umbilicus, and the lower border is about on the level of the umbilicus, its free border having moved to the left full three inches in a week, and all the diameters being proportionately

To Illustrate Dr. Van Rensselaer's Article on "A Case of Acute Lienomedullary Leukaemia."

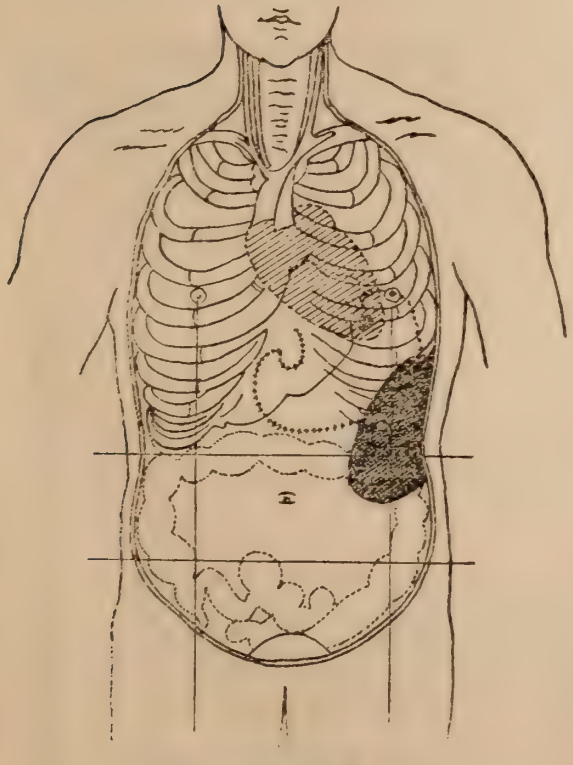
Albany Medical Annals, November, 1897.



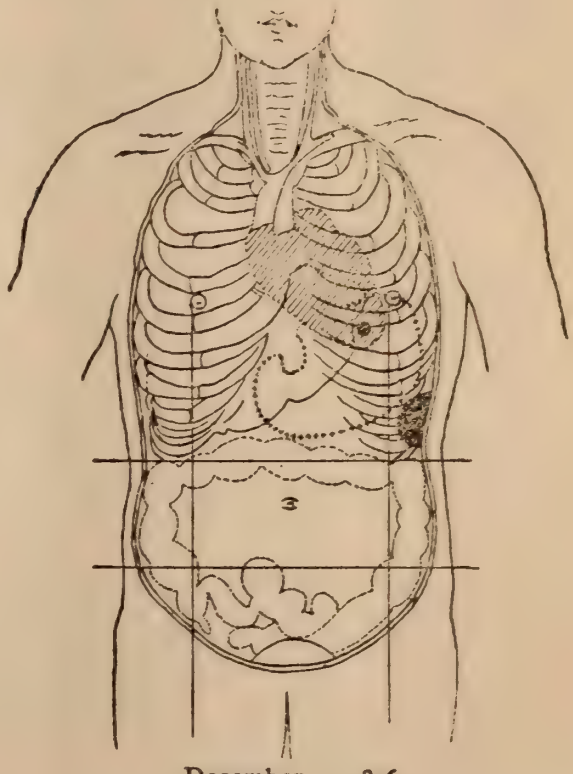
December 2, 1896.



December 11, 1896.



December 17, 1896.



December 22, 1896.

smaller. The apex of the heart has now returned to its normal position.

The following week showed a distinct gain in every way except the diarrhœa, which still remained at from three to four movements a day. His pulse averages 90, and his dyspnœa is not so marked.

Examination of the blood shows a very wonderful improvement in respect to the diminution in the white corpuscles; they have now sunk to 160,000; the red corpuscles have slightly increased to 3,670,000, while the hæmoglobin remains the same. Thus in one week there has been a diminution of about 700,000 white corpuscles per cubic millimeter, the proportion now being about one to thirty.

Physical examination of the spleen shows also a wonderful change for the better. By the most careful tests it was found that the spleen has shrunk to a normal size; it cannot be felt below the free border of the ribs, and percussion gives but a slight dulness in its proper situation.

The anæmic bruit has entirely disappeared from his neck.

During an improvement in this disease, which sometimes happens, it has been noted that the uric acid is greatly increased in the urine.

In the past two weeks we have made two tests of this. The urine examined was amber, acid, 1019, and contained no albumen nor sugar. If a drop of urine was allowed to evaporate on a glass slide, it left a copious deposit of uric acid crystals.

The estimation of the quantity of uric acid was determined by Heintz's method, which depends on the decomposition of urates by hydrochloric acid setting the uric acid free. It is not necessary to go through the experiment in detail, but the result was that on the first occasion the urine was found to contain three times as much uric acid as normally occurs in urine, and on the second occasion twice as much.

On December 23, *i. e.*, at the end, his fifth week in the hospital, the patient was much less anæmic; he looked better, and he felt so much improvement that he made arrangements to spend Christmas outside of the hospital.

The entire subsidence of an enormously distended spleen and the wonderful improvement of his leucocytosis, whereby the num-

ber of white cells had fallen from 1,240,000 to 160,000, and the proportion between white and red cells of one to two at first to one to thirty in the short space of three weeks, gave us all the greatest encouragement in his condition.

But alas, our hopes were suddenly destroyed. He went to bed feeling well. During the night he was found unconscious and suffering from a convulsion, which lasted an hour, and which ceased only when life was extinct.

Most urgent efforts to obtain an autopsy were made, but without success.

On comparing the most salient features of this case with typical instances of leukæmia, we find that while there are, of course, many things in common, yet there are several points about this case that are interesting.

In a general way, many clinicians recognize two fairly distinct varieties of leukæmia. One, which is called the lymphatic leukæmia, or lymphæmia, is characterized by a more or less involvement of the lymphatic glands throughout the body, as well as the splenic enlargement, but without any symptoms referable to the long bones. In this variety the leucocytosis is confined mostly to an increase in the lymphocytes, and is not of a severe grade.

The other variety, named the lienomedullary leukæmia, or splenæmia, has, as noted features, the involvement of the long bones, absence of lymphatic enlargements, a marked increase in the size of the spleen, the degree of the leucocytosis is greater, and is composed almost entirely of the myelocytes and eosinophile leucocytes.

To this latter variety, the lienomedullary leukæmia, the case just reported evidently belongs. As in it no enlargements of the lymphatic glands could anywhere be detected, the long bones became very tender, the spleen was enormously enlarged, the leucocytosis was extreme, and the myelocytes and eosinophile leucocytes were is excess, while there was no increase in the number of lymphocytes.

Both varieties of leukæmia usually run a chronic course; and the disease, as we have seen, is a comparatively uncommon one; so that acute cases are of exceeding rarity.

This case may fairly be called an acute one. The man was in comparatively good health until two months previously to enter-

ing the hospital, when he was injured in one of his long bones, a rib, and it is from this time that he dates his illness. When he entered the hospital the spleen was very much enlarged and the leucocytosis marked; other symptoms common in leukæmia, however, except bronchitis, were absent, but developed during the five weeks that he was under observation.

Of these symptoms the most important, perhaps, is the involvement of the long bones. In these no tenderness could be elicited at first, though careful examination was repeatedly made. Within two weeks this sign made its appearance, being confined at first to the shin bone and gradually spreading to all the long bones of the body.

Diarrhœa, another common and exceedingly intractable symptom, developed during the first week, and continued the rest of his life.

Priapism came on in his third week at the hospital, and slight general anasarca developed also at this time.

The rapidity with which the leucocytosis diminished can fairly be claimed as pointing to an acute process, as, in a general way, the more chronic the disease the less it is affected by medicines.

Again, the very meagre number of nucleated red cells is strongly indicative of acute leukæmia.

Still further, the extremely rapid change in the size of the spleen is contributory evidence of an acutely progressing malady.

In the chronically enlarged viscus new connective tissue forms, which prevents sudden changes in the size, and the blood vessels are also chronically distended and incapable of rapid contraction. The fact that this spleen could daily be seen to diminish precludes the idea of chronic changes.

All these various symptoms, when taken together, make a mass of evidence in favor of an acute process.

Finally, one word as to his taking off, when everything seemed favorable to a continued lease of life. We know from reported cases that death from cerebral hemorrhage is fairly common in leukæmia.

In the case reported, ophthalmoscopic examination revealed hemorrhage at the fundus of the eye, and repeated epistaxes occurred in the hospital.

As his heart was not affected, and as his kidneys were sound,

as he had a tendency to hemorrhage, and as he died suddenly during a convulsion, the evidence is pretty strong, in lack of a post-mortem verification, that his career was cut short by a cerebral hemorrhage.

123 STATE STREET.

For the ANNALS.

A STUDY OF A HOSPITAL PLAN.*

BY HENRY HUN, M. D.

Professor of Diseases of the Nervous System, Albany Medical College.

APPENDIX.*

As the result of a number of criticisms and suggestions since the publication of the foregoing article, these plans have undergone some minor modifications, which seem to me to be improvements and which reduce considerably the cost of construction. Unfortunately the printing of the plates and the text was already finished before these changes were made and they can be shown, therefore, only as an appendix to the original article. These changes do not in any respect alter the general arrangement of the hospital. The relation of the pavilions remains unchanged, but each pavilion is made longer and narrower. In this way, while the cubic contents of the ward is not altered, the beds can be further separated from each other and the necessity of having a line of supporting columns down the middle of the wider ward is obviated. Another important and desirable change consists in advancing the central portion of the administration building some twenty-five feet, and in separating the elevator and the staircase; so that the former can be enclosed in solid brick walls which is more in harmony with the building and fire laws.

In the portion of the administration building thus advanced are placed the superintendent's offices on the first floor, the superintendent's private apartments on the second floor and the house staff's private apartments on the third floor. All these rooms are in front of the main staircase and are, therefore, to a very considerable degree, separated from the rest of the hospital and thus have a very desirable privacy. The dining-room of the superin-

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* Continued from the ANNALS of September, 1897.

tendent and that of the house staff are close to their respective apartments, and, at the same time, next to the general serving rooms. The extra room thus obtained allows the offices of the house staff to be brought from under the amphitheater so that it can be brought down to the first floor and this building need only be two instead of three stories high. Not only is the amphitheater brought down to the first floor, but it is also turned around. In this way the students' staircase can be brought inside the building, and the students can pass to their seats as they ascend the stairs, and do not all have to ascend to the top of the benches and then descend again to their seats. Although this turning around of the amphitheater improves greatly the light by reason of the large windows in the northern wall, yet its desirability is doubtful to my mind. Every part of the plans is so clearly labeled and the alterations from the original plans are so slight that it is not necessary to describe in detail plates 6, 7, 8 and 9.

It is probable that a hospital of first-class construction could be erected in accordance with these plans, including heating, plumbing, etc., at a cost approximating closely two hundred thousand dollars.

Clinical and Pathological Notes.

Accidental Rupture of Intestines; Immediate Operation; Recovery.

FROM THE SURGICAL SERVICE OF THE ALBANY HOSPITAL.

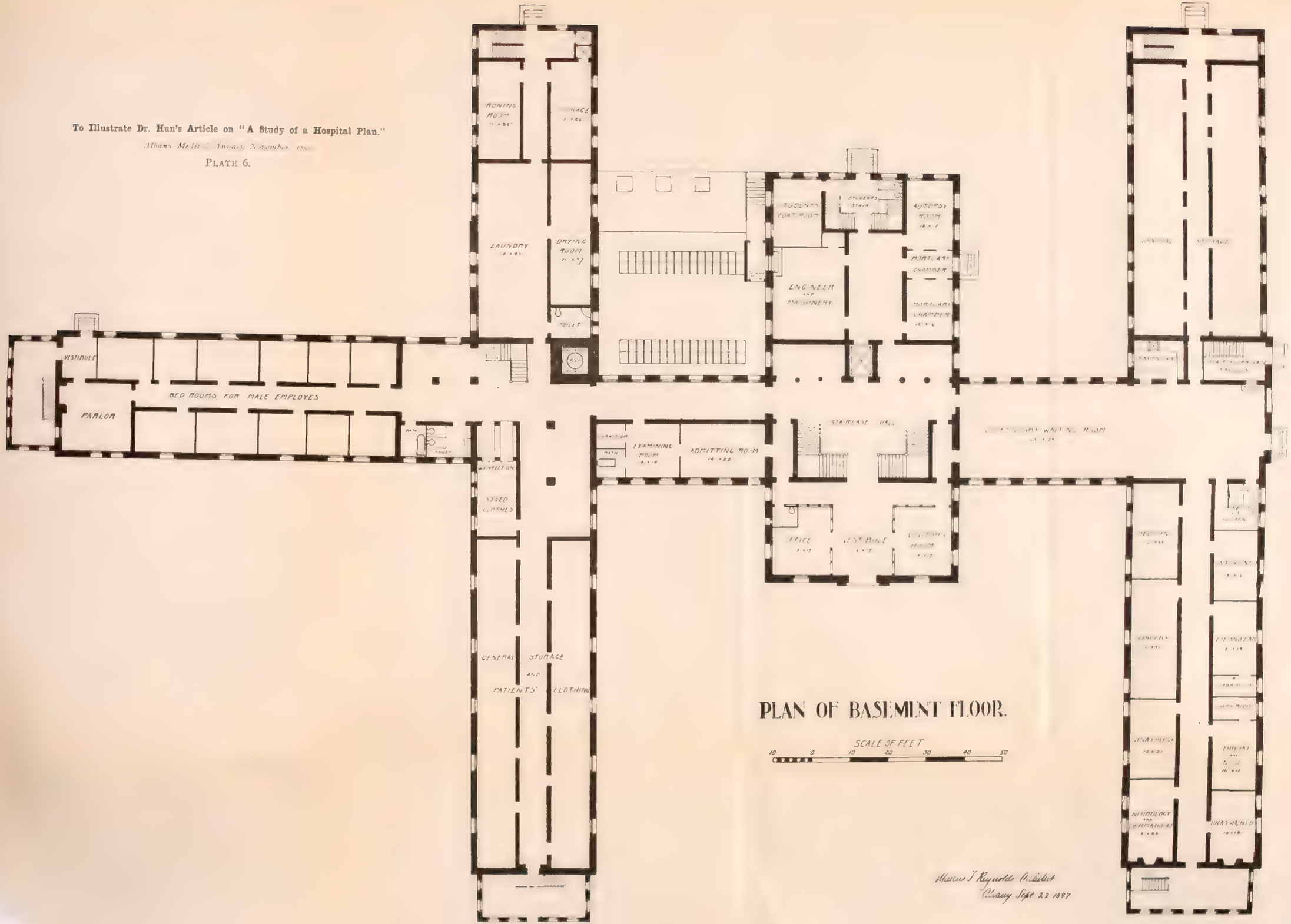
On Sunday afternoon, at about half-past five o'clock, May 16, 1897, the ambulance service of the Albany Hospital presented for treatment a patient with the following clinical history and symptoms:

Master John M., aged twelve, a healthy, well-nourished schoolboy, after a hearty meal of stewed meat and potatoes, joined in a game of baseball with playmates in a vacant lot in the immediate vicinity. By accident, the striker, with a heavy, round bat, dealt him a severe blow on the abdomen, the larger end taking effect at a point just below and a little to the right of the umbilicus. Two hours had elapsed from the time of injury and his

To Illustrate Dr. Hun's Article on "A Study of a Hospital Plan."

Albany Medical Annals, November 1897

PLATE 6.



PLAN OF BASEMENT FLOOR.

Marcus T. Reynolds Architect
Albany Sept 22 1897

To Illustrate Dr. Hun's Article on "A Study of a Hospital Plan."

Albany Medical Annals, November, 1897.

PLATE 7.

EMPLOYEES' PAVILION

NURSES' PAVILION

MEDICAL PAVILION

SECTION OF AMPHITHEATER

ADMINISTRATION BUILDING.

SURGICAL PAVILION

PRIVATE PAVILION

PLAN OF FIRST FLOOR.

SCALE OF FEET

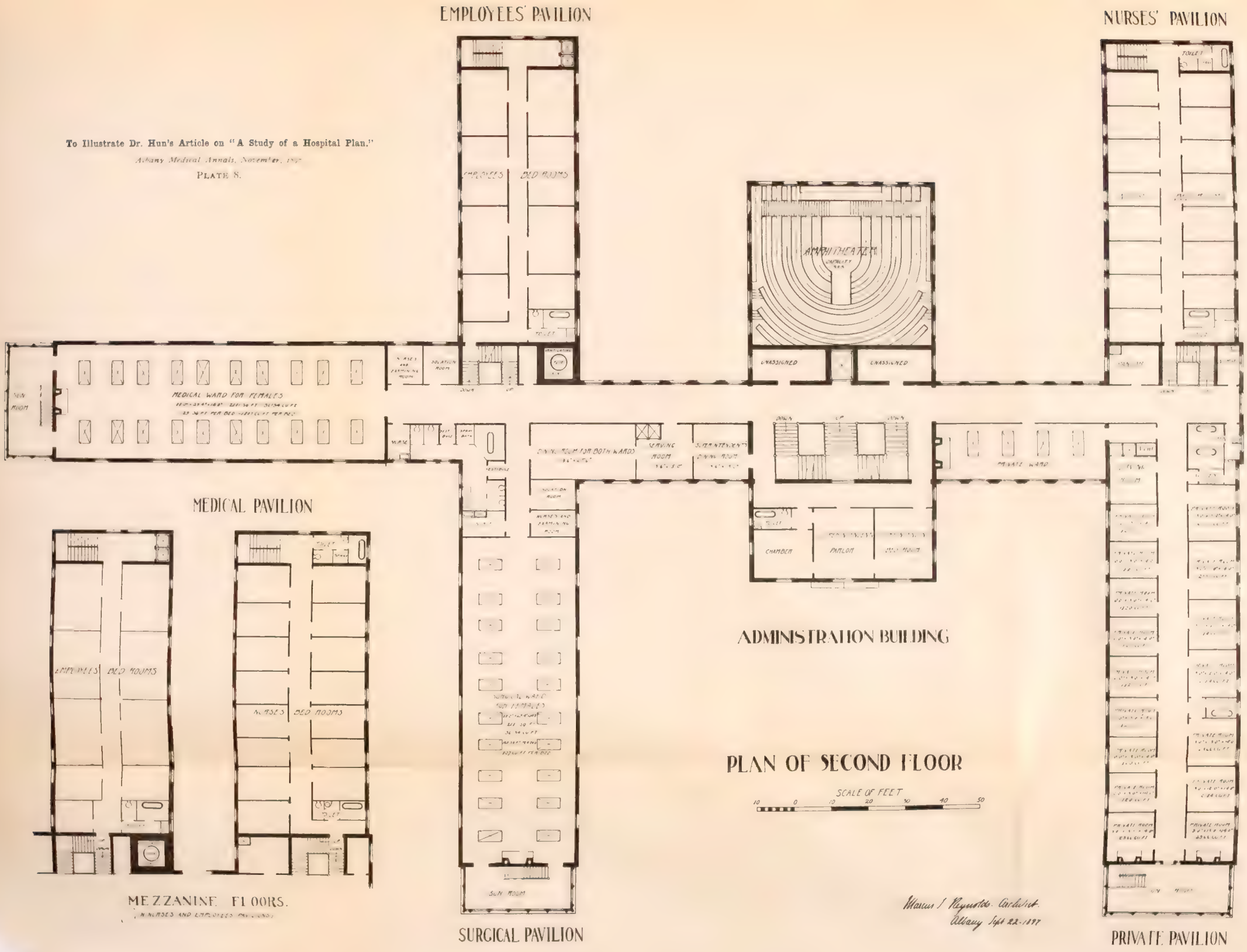
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Marcus T. Reynolds, Architect
Albany, Sept 22, 1897.

To Illustrate Dr. Hun's Article on "A Study of a Hospital Plan."

Albany Medical Annals, November, 1897

PLATE 8.

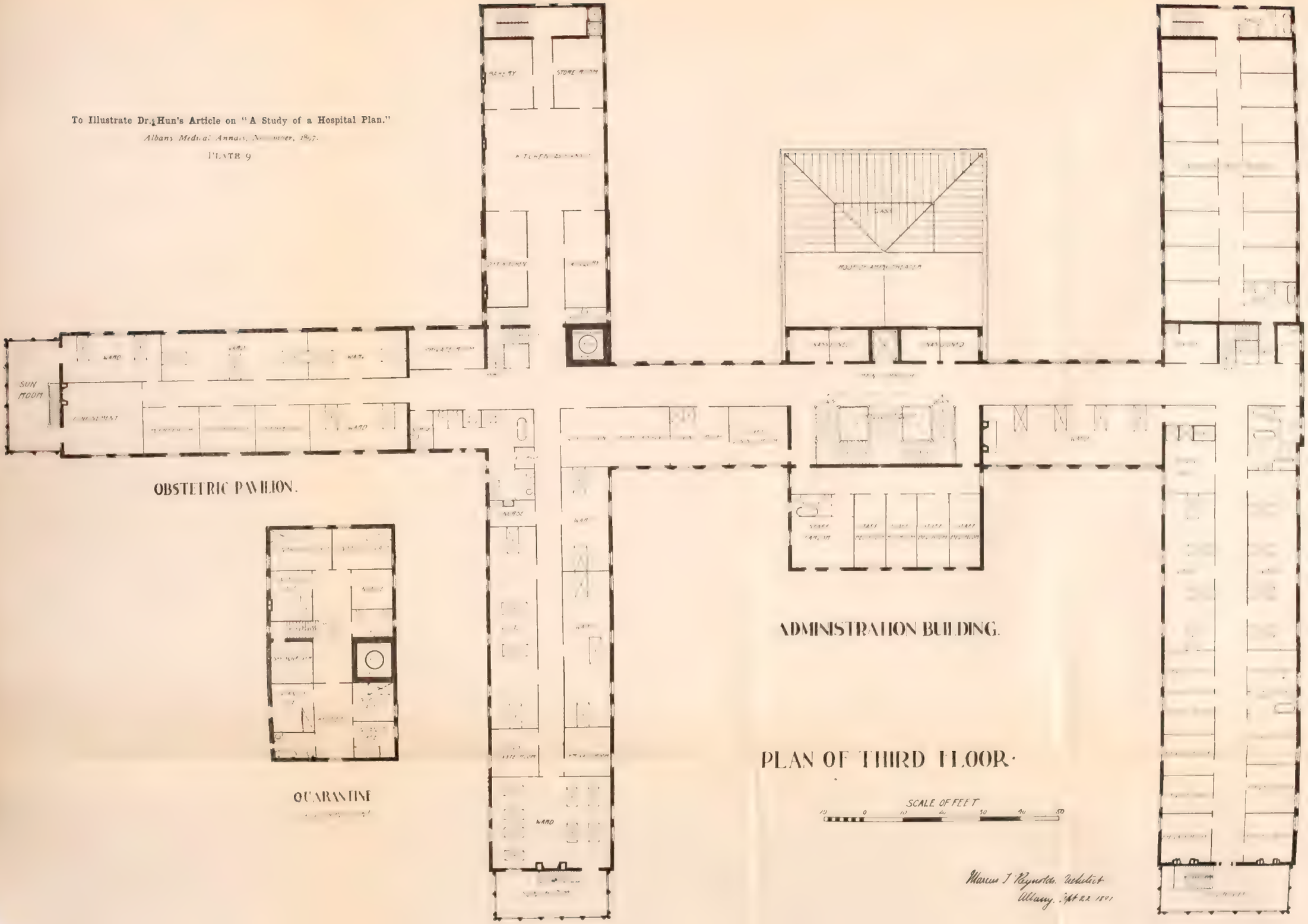


Marcus T. Reynolds. Architect.
Albany Sept 22-1897

To Illustrate Dr. Hun's Article on "A Study of a Hospital Plan."

Albany Medical Annals, November, 1897.

PLATE 9



PLAN OF THIRD FLOOR.

Marcus T. Reynolds, Architect
Albany, Sept 22 1897

arrival at the hospital, where he was immediately placed in bed and surrounded by hot-water bottles. Morphine and strychnine had been properly administered hypodermatically by the ambulance surgeon. He had vomited twice.

When I arrived, a few minutes later, he lay on his right side, with knees flexed and shoulders drawn forward to relax as much as possible the tension of the abdominal muscles. He was in a condition of shock. His face and lips were blanched; cold, clammy perspiration; shallow respiration; weak, rapid, compressible pulse; subnormal temperature, and he could be aroused only sufficiently, by speaking to him sharply, to answer "Yes" or "No."

Upon further examination, the point of injury was found to be exquisitely sensitive, the slightest pressure or manipulation eliciting cries of pain. Palpation revealed no symptoms of effusion of fluid in the peritoneal cavity. The contraction and tonic spasms of the abdominal muscles were marked, transmitting the characteristic "board-like feel," so prominent in injuries or diseases of the abdomen.

A diagnosis of probable rupture of intestine was made, and an immediate operation advised. Pending the consent of the parents, which was with difficulty obtained, an ice-bag was placed over the seat of injury. He was removed to the operating-room and ether administered. The abdomen was scrubbed with brush and green soap, and the parts were shaved to remove hair and superficial layers of skin. Towels wrung out of hot bichloride solution (1-500) were laid for a few minutes on the abdomen. A final dash of alcohol was given, and an incision three inches long was made directly over the point of greatest tenderness. Nothing abnormal presented itself when the peritoneal cavity was opened, except congestion due to the blow. Sterilized towels wrung out of hot water were laid on the abdomen and the intestine slowly withdrawn and carefully inspected. The gut was kept well covered and warm by hot towels, when at about the middle third of the ileum, a lacerated, transverse lesion, involving about one-half of the lower intestine, presented itself. Some blood and fæcal matter had escaped from the intestine into the peritoneal cavity. This was sponged out as well as

possible and the gut repaired by the insertion of eighteen Lembert sutures.

The intestine was then returned and the peritoneal cavity thoroughly flushed with four gallons of normal salt solution at a temperature of 105° F. Four "Through and through" silk worm sutures were used to close the incision, leaving room for a small flange drainage tube. The wound was dressed in the usual manner, and the boy was returned to a private room, with a special nurse in attendance. The tube was repacked as occasion demanded, and the patient progressed uneventfully. In a week the tube was removed. The sinus was washed out with peroxide of hydrogen daily, and in five weeks the boy returned home perfectly well.

W. G. MACDONALD.

Editorials.

The New Tuberculin.

The results obtained in the preliminary use of the new tuberculin are so discouraging as to render improbable any extended trial in the human species. The disastrous failure of seven years ago and the captious criticisms upon his methods were such as to make Koch most thorough in his further investigations and most conservative in his claims.

It certainly then seems strange that, with his intensely scientific methods and calm judgment, he should now offer to the medical profession a preparation which induces so many unfavorable symptoms in spite of his claim to the contrary. One of two conclusions appears inevitable — either the investigators have not shown the necessary care and judgment in their application and administration of tuberculin, or laboratory results upon the lower animals cannot always be accepted as an entirely correct basis for deductions in the human species.

Renal Tuberculosis.

The existence of renal tuberculosis as a secondary infection to some primary tubercular focus elsewhere in the body has been recognized for a long time, but its frequency has been less known until quite recently. Tubercular involvement of the kidney occurs in about 5% of the bodies of adult

persons dying of tuberculosis, and in children the prevalence of tubercular lesions is much more common, reaching as high as 15%. The recognition of primary tuberculous nephritis has been due largely to the work of Tarpet, who made a study of the different primary localizations of this disease in the uro-genital tract. According to I. Straus, the kidney in the human subject cannot be considered as an organ of predilection for the secondary localization of phthisis. Experimentation would seem to confirm this observation. Guyon and Lancereaux maintain that in the majority of cases the kidney is invaded subsequently to the bladder; on the other hand, Heiberg holds that tuberculosis of the kidney is more common than that of the bladder.

Tuberculosis of the kidney manifests itself in two principal forms — miliary and caseous. It may either be unilateral or bilateral; one kidney is often the seat of profound alterations, while its fellow of the opposite side may present only initial lesions in the cortex. The miliary form is rare in the adult, and more frequent in children, as pointed out by Rilliet and Barthez. Miliary renal tuberculosis generally affects both organs, and is always the result of transportation of the tubercle bacilli through the circulation from some primary focus of the disease. The caseous variety, instead of affecting both organs, is frequently limited to one side, and the disease generally pursues a chronic course, while the miliary form is acute in its progress. Renal tuberculosis is more common in males than females.

The disease at its inception is insidious in its course, and the symptoms are probably never very marked until the pelvis of the organ is involved. Vesical disturbances are frequently the first which make themselves evident. Pyuria, dysuria and frequent micturition should always excite suspicion, when these are not referable to some local cause. Pain is a variable symptom; it may be a continuous, dull, aching pain, limited to lumbar region of affected side, but in other cases it may be sudden and sharp, closely simulating the pain of renal colic. Tenderness on deep pressure is not uncommon. Hæmaturia is often an initial symptom. In the absence of extensive cystitis the urine is acid, and, as Osler suggests, this may serve as a means in the differentiation between pyelonephritis and tubercular kidney. The urine is albuminous and contains very few tube casts.

Fever is generally present in the evening, ranging between 99° and 102° F. With the advance of the disease, systemic disturbances occur. The diagnosis of tuberculous nephritis can only positively be made by the bacteriological verification in finding the tubercle bacilli in the urine.

The prognosis in this malady is always grave, and the only remedy is surgical intervention, without which it usually terminates fatally within from a few months to three years. Concerning the surgical treatment, Senn says: "The operative treatment should be limited to cases in which the strength of the patient is sufficient to resist the immediate effects of the operation, and in which the renal disease either is primary, or, if secondary, the primary focus is not too far advanced."

Bangs (*Boston Med. & Surg. Jour., July* 8, 1897) reports his results from nephrectomies in 112 cases. The mortality from the operation in these cases was 19%, and adding to this those who died within a few months, the mortality reaches 28%. This corresponds with the figure of Pollet, who considered the mortality 29%.

This mortality will no doubt be lowered, for the success of treatment depends on an early diagnosis.

THE ALBANY CITY FREE DISPENSARY. — This association having been approved by the State Board of Charities, has filed a certificate of incorporation with the Secretary of State. The directors are Drs. Willis G. Macdonald, Charles E. Davis, William H. Happel, Louis Le Brun, Terrence L. Carroll, Leo H. Neuman, James W. Wiltsie, Theodore F. C. Van Allen and C. Harper Richardson. It is the purpose of the association to establish a dispensary in the southern part of the city, where there are many in need of medical aid and attention. The necessity of such an institution arose from the prospective removal of the City Hospital to the western part of the city, and from the fact that the City Board of Missions treated during last winter more than one thousand patients.

Scientific Review.

The New Tuberculin and its Therapeutic Value. — Since the dire failure, seven years ago, of the treatment of tuberculosis by tuberculin as recommended by Koch before the Tenth International Medical Congress, in Berlin, the hope has been constant that this failure was merely a temporary setback, which would more clearly mark the way to future success.

This expectation had been stimulated by the rumors that Koch was devoting his life to the production of a perfected tuberculin which would possess curative properties without the dangerous accompaniments of the first product. These rumors proved to be true, as Koch, in the *Deutsche Medicinische Wochenschrift, No.* 14, 1897, announced the production of the new tuberculin and the scientific basis upon which its curative properties depended. The use of tuberculin depends upon the theory of immunization, *i. e.*, the employment of bacteria and their products for curative and protective purposes. While at first immunity against infectious diseases was regarded as a simple and indivisible process, it is now believed to be much more complicated. Immunization to tetanus has no influence upon the bacilli of tetanus, but is simply an antidote to the poison produced, whereas animals immunized against cholera and typhus are protected from the living bacteria and not against the poisonous products. The ideal immunity, therefore, would be protection against all the injurious effects of pathogenic micro-organisms.

In tuberculosis a produced immunity would seem somewhat hypothetical, as human tuberculosis continues for years without a diminution of the tendency thereto; the bacilli grow in the human tissues usually only in small numbers, and very slowly, and when surrounded by necrotic tissue and on mucous membrance are not absorbed. When, however, the body is quickly filled with bacteria, as in miliary and experimental tuberculosis, there occurs a period in which the bacilli, though present in the beginning in great numbers, disappear, *i. e.*, a stage of immunity which, however, appears too late to be of any value to the individual.

Koch endeavors to induce this stage of immunity at an early period when it can be of therapeutic value. Injections of live or

dead bacilli produced only local processes, without inducing the wished-for saturation of the system. Bacilli treated with diluted mineral acids or with strong alkalies at the boiling point became completely absorbable without, however, any resulting immunity, probably due to the great change produced in the substance of the bacilli. Experiments made to isolate the powerful properties of the bacilli by extraction with glycerine led to the discovery of tuberculin which induced a toxic but not a bacterial immunity.

Experimentation with a one-tenth caustic soda solution gave an alkaline extract called TA, which induced a lengthy reaction, and in large doses produced abscesses. Koch then triturated the bacilli in order to destroy completely the enveloping layer of fatty acids, and thus render them more easily absorbed. A well-dried culture of bacilli was triturated, the result dissolved in distilled water and then centrifugated. It was thus separated into an upper, clear, transparent opalescent fluid, containing no tubercle bacilli, and called TO, and a muddy deposit denominated TR. This latter (TR) was dried, triturated and centrifugated until it was transformed into a perfectly clear fluid. Examination showed that TO contained the elements soluble in glycerine, the old tuberculin T and TA, while TR consisted of the insoluble elements. T, TA and TO are apparently identical, having slight immunizing property, while, on the contrary, TR has marked immunizing qualities.

In the preparation of TR only highly virulent, young cultures, which have been dried in a vacuum evaporator, are used, and it is conserved by the addition of 20% of glycerine.

The dosage is very simple. One c. c. of the fluid contains 10 mg. of the solid substance, and for ease of administration is diluted with the normal saline solution. The initial dose is 1-500 mg., after which a reaction rarely occurs. Every second day the dose is gradually increased, but a reactive fever of more than .5° C. should be avoided. The dose may thus gradually be increased to 20 mg.

Koch has in this way immunized guinea pigs so that they were not infected by injections of virulent cultures. The points of injection were unaffected, and the neighboring glands unchanged and free from bacilli. In affected animals, injections of TR produced, without exception, more or less marked retrogressive

changes in the organs involved. Complete immunity occurred two to three weeks after the use of the larger doses.

The treatment in human tuberculosis should begin early. Patients who can live only a few months cannot be helped. Mixed infections (streptococci, septic) and patients with a temperature above 38° C. are only exceptionally favorable for this treatment. In lupus the local reactions are slight, although there is a much greater improvement than with the old tuberculin. Koch believes that it is yet too early to speak of cure. In this treatment there is an absence of the marked reaction, of the temporary infiltration of the affected areas and of the troublesome symptoms which followed the use of the old tuberculin. Whether treatment with TR alone or in combination with TO, or with serum preparations obtained by TO or TR, will be the more effective is still to be decided.

Although less than six months have elapsed since this announcement, it seems wise to present the preliminary reports upon its use, although these must necessarily be incomplete.

Nencki, Maczewski and Logucki[1] report the results obtained in the hospital at Warsaw. They find fault with the great concentration, one drop being sufficient for 500 patients, and also its limited use — only in patients in the beginning stage, without fever, free from streptococcus and staphylococcus infection. Some of the tuberculin examined bacteriologically showed the presence of active pneumo-, strepto- and staphylococci. Their conclusion is that the new tuberculin is inconvenient to administer, difficult to test and cannot be recommended for further use.

Schröder[2] also found many bacteria in the tuberculin — in two instances tubercle baccilli and in one streptococci. In the three patients in whom it was employed no encouraging results were obtained, and the reaction was violent, as after the use of the old tuberculin. In one patient the pulmonary symptoms were more marked. It increased the expectoration, the number of bacilli, and produced a loss of weight. Gastro-intestinal symptoms, headache and exhaustion occurred with the reactions. He believes that a treatment for tuberculosis, which can be used only in a small fraction of the patients infected, and in those least affected, and which even then is long and expensive, does not appeal strongly to the confidence of the physician.

Busenius[3] treated nineteen patients at the Charité. Only four patients could complete the treatment by increasing the dose, while in the others the reactive symptoms were so severe as to necessitate the discontinuance of an increase in the dosage. Great differences were noted in the virulency of the tuberculin. Dimunition or disappearance of dulness over infiltrated lung tissue was not found. In pharyngeal and laryngeal tuberculosis no marked improvement was recognized. Perichondritis, when present, was unaffected. The most favorable results were in cases of lupus. Ulcerations healed promptly after a few weeks, while treatment for a considerable period with the old tuberculin was of no avail.

Wörner[4] believes that failures with tuberculin are due to a too rapid increase in dosage. He increased the size of the dose very slowly, and had only slight rises in temperature and no subjective symptoms. In only one case did he have to discontinue the treatment on account of continuous evening temperature and excessive night sweats.

Schultze[5] had nine patients under observation. In three patients the treatment was discontinued on account of tubercular laryngitis, diarrhœa, loss of weight and exhaustion. In four cases there was no pronounced change. Marked improvement was seen in only two patients, in one of whom a severe perichondritis was healed.

Slawyk[6] tested the tuberculin upon five children in the clinic of Heubner. Two children received more than twenty injections — the older and stronger child showed marked reaction, fever, sweating, collapse, while the younger experienced no discomfort. It seemed impossible to determine the exact dose suitable, and a severe collapse proved that the remedy must be carefully administered. In one child there was an improvement in the pulmonary condition, and in another a marked increase in weight and a diminution in size of the cervical glands and the enlarged spleen. The writer is not yet willing to express an opinion upon its curative value.

Seeligman[7] gives his experience in a patient with marked lupous ulceration of the nose and right hand, erosions of the cervix, with a discharge of pus containing a few tubercle bacilli, but no gonococci, pyosalpinx tuberculosa detra et sinistra and

endometritis tuberculosa. On each side of the uterus there were hypersensitive swellings about the size of a child's fist. After forty injections, which were borne with great difficulty, there was marked improvement in the general condition — pain in abdomen completely disappeared, menstruation became normal, lupous ulcerations of nose and hand greatly improved, and complete disappearance of the swellings about the uterus. The cervical erosions were very much improved, and tubercle bacilli were no longer found in the discharge.

Pfeifer[8] reports the results of treatment in eight patients who were in good physical condition, without fever, had been under observation for a considerable time in the hospital, and were regarded as beginning cases of tuberculosis. Febrile temperature appeared in all these cases, and often there were local reactions at the point of injection — redness of the skin, painful infiltrations, and in three cases fluctuating abscesses, which, however, were reabsorbed. No relationship could be determined between the local reaction and the size of the individual dose. The preparations showed unequal strengths and also marked contamination. The therapeutic result was not at all satisfactory — in two patients anorexia occurred, and in three there was constant loss in weight. Disappearance of the moist rales over the affected part, or a diminution of the area of dulness was not evident. In one patient moist rales, cough and expectoration, which had disappeared, reappeared.

Doutrelepont[9] obtained more satisfactory results in fifteen cases of lupus, although he, too, complains of the general and local reactions and the uncertainty of the preparation. The age of the tuberculin has, in his opinion, some effect on the febrile reaction. There was a relatively rapid healing of the ulcerations, the hypertrophy diminished and scar tissue soon appeared. The swollen lymphatics decreased in size, although some suppurated and had to be operated upon. The new tuberculin seems to have more curative value than the old, but care must be exercised in the dosage.

Herzfeld[10] treated with tuberculin seven cases of laryngeal tuberculosis, and in only one case was there a favorable result — in fact, the local treatment which he had discontinued had been of more value. The rapid change in the solution, the incon-

stancy in strength and the disagreeable reactions were all positive disadvantages in the treatment.

Baudach[11] had relatively favorable results with tuberculin in combination with good hygienic treatment — hydrotherapy, rest-cure, out-of-door exercise and substantial diet. In addition to other reactive symptoms, he found regularly an enlargement of the axillary glands. Increase in number of rales and in amount of expectoration repeatedly occurred. In some cases, however, the percussion note became clearer and the area of dulness diminished. The writer believes that his results in general were positively favorable, and that in many cases the treatment produced a more rapid improvement.

Leick[12] had under observation fifteen patients, but not one reached the maximum dose. One patient died suddenly of heart failure, and undoubted improvement was noted in only two patients. He cannot yet state if tuberculin has a specific curative effect upon tuberculous processes.

De la Camp[13] sums up his results as follows: The tuberculin frequently produces painful inflammatory infiltrations of the skin. They subside very slowly, and exceptionally may suppurate. The new tuberculin is superior to the old only in the greater proportion of its toxic constituents. A careful trial might be made in beginning and limited tubercular processes, but the tuberculin used should be of a more constant strength than the present preparation.

Müller[14] treated a patient with tubercular otitis media sinistra. There was no improvement in the left ear, and the drum membrane of the right became affected with miliary tubercles, and there was a secretion of pus containing tubercle bacilli.

Jez[15] saw in a number of patients after treatment an increase in number of moist rales and in area of dullness. The expectoration was more abundant and the bacilli more numerous. All the patients complained of weakness, exhaustion, pain, etc. He believes that this treatment possesses neither immunizing nor curative properties.

Eve[16] has administered tuberculin to eight cases of surgical tuberculosis. Three cases of tubercular joints, without sinuses or softening, showed the only favorable results, and in two of these such results might have been anticipated from rest and

improved diet. Four cases of tuberculosis with sinuses were absolutely uninfluenced by treatment, with possibly one exception. He concludes that some slight favorable influence may be exerted upon cases of early tuberculosis of the joints, where there is no softening, but it is negative if the caseous material has broken down, and especially when it has become septic. He also makes notes of the many reactive symptoms.

Spengler,[17] of Davos-Platz, has had thirty-six patients under treatment. In the older patients there was a striking and continuous diminution in the marked expectoration, and in one case the physical signs considerably improved, although during the previous year there had been no improvement under regular treatment. Six patients became practically free from expectoration, and no tubercle bacilli were found in what could be obtained. During the treatment he has seen no nephritic or intestinal complications. In properly selected cases and with careful use, he thinks tuberculin is a very valuable remedy.

Maragliano[18] communicated his results to the Biological Society of Paris. He injected three patients suffering with and one free from tuberculosis. All had fever, continuing two to four days. In the cases of tuberculosis physical signs appeared over the lungs where before there had been none. In healthy as well as tubercular guinea pigs the temperature was increased after the injections, and in like doses the same reaction followed as after the old tuberculin. The microscopic examination of the tuberculin showed the presence of bacteria and yeast fungi.

Van Hoorn[19] had under observation ten patients with lupus and one with tuberculosis of the bladder. All the cases of lupus improved under the treatment; the color of the affected parts became paler, the infiltration diminished, and small, irregular tubercles disappeared. The weight increased in four patients, was stationary in five and diminished in one. The result in the patient with tuberculosis of the bladder was not so satisfactory. The patient was unable to take the tuberculin sufficiently often or in large doses on account of the disagreeable effect upon the bladder.

Gerber and Prang[20] saw improvement in three out of six cases of lupus and in one of four cases of pulmonary tuberculosis, and no improvement in a patient with tubercular adenitis. In three

patients treatment had to be discontinued on account of local pains, and in two patients because of the extreme general exhaustion. The patients who were able to take a complete course of treatment received the most improvement, and those in the best condition reacted most favorably. They believe that in lupus, as well as in tuberculosis, when the patients are in good condition, and the affection is not too far advanced, the remedy is of value.

Kaatzer[21] saw improvement in four cases of pulmonary tuberculosis and no improvement in eight. Two patients with intestinal tuberculosis were unaffected by the treatment.

Trudeau and Baldwin[22] show the extreme difficulty of preventing accidental contamination of the tuberculin in the complicated process of manufacture without the use of heat or antiseptics, and the evident uncertainty of separating, by centrifugation alone, the uncrushed and still living tubercle bacilli from the fluid in which they are suspended. Of the seventy-six vials of tuberculin examined thirty-five showed evidences of contamination and forty-one were sterile. In some of the contaminated vials living tubercle bacilli were found, and one guinea pig, as a result of immunizing injections, developed tuberculosis. Their conclusion is that unless the new tuberculin can be freed entirely from living tubercle bacilli by repeated centrifugation or some other means, it should not as yet be used in the treatment of human beings.

1. Therapeutische Wochenschrift, No. 23, and Presse Med. No. 46.
2. Münchener med. Wochenschrift, No. 29.
3. Deutsche med. Wochenschrift, No. 28.
4. " " " No. 30.
5. " " " No. 28, 1897.
6. " " " No. 30, 1897.
7. " " " No. 30, 1897.
8. Zeitschrift für praktische Ärzte, No. 15, 1897.
9. Deutsche med. Wochenschrift, No. 34, 1897.
10. " " " No. 34, 1897.
11. " " " No. 34, 1897.
12. " " " No. 34, 1897.
13. " " " No. 34, 1897.
14. " " " No. 34, 1897.
15. Wiener med. Wochenschrift, No. 31, 1897.
16. Lancet, September 18, 1897.
17. Deutsche med. Wochenschrift, No. 36, 1897.
18. Gazz. degli ospedali e delle clin., 1897, No. 81.
19. Deutsche med. Wochenschrift, No. 39, 1897.
20. " " " No. 39, 1897.
21. " " " No. 39, 1897.
22. Medical News, August 28, 1897.

State Medicine.

EDITED BY HARRY SEYMOUR PEARSE, M. D

The Anti-vivisection Movement. — The last Congress had before it for consideration a bill for the further prevention of cruelty to animals in the District of Columbia, providing for the control and restriction of biological and physiological experiments upon animals for the advancement of science. No bill of that Congress was of greater interest to the medical profession throughout the United States as was shown by the constant discussion of its chief points and import by the medical press. And, at this point, it is safe to say that no journal of medicine, based on scientific principles and faithful to the advance of science, favored the measure. This may be said to the honor of the medical fraternity which is ever ready to defend its citadel.

Had this bill become a law in the District of Columbia, it would have paved the way to violent controversies in the legislatures of almost every State in the Union. It was generally known that the movement at Washington was but a feeler, and that had it succeeded, the anti-vivisectionists would have presented bills of similar nature in the various States.

We trust that the action of the Senate Committee which reported the bill favorably is not an indication of the general cast of the Senate, and that the partial success of its promoters in the last Congress does not forbode complete success in the next.

The protests against the bill were numerous; aside from those of individuals and medical journals, numerous scientific societies and associations passed resolutions against the measure. All these were submitted to Congress. The memorial of the American Medical Association, one of the largest and most influential bodies of scientific men in the United States, would have been ignored had a hostile Senator persisted in his objection to having it printed as a document. This memorial said in part: "Animal experimentation has always had a large share in the development of modern surgery. Modern cerebral surgery also owes its exactness and success almost wholly to cerebral localization and antisepsis, both of which were first studied upon animals and later by the application of the knowledge so gained to man. Bacteriology would not now exist as a science, nor would accurate mod-

ern surgery and a large part of modern medicine be possible, had experiments upon animals been prohibited, as some zoöphilous women who love dogs better than men or women, and even little children, desire."

The provisions of the bill were essentially: 1. For the use of anæsthetics in all painful experiments on living vertebrate animals, the so-called inoculation experiments, tests of drugs and medicines and cases of recovery from surgical procedure being expressly exempted from this requirement. 2. For the licensing of all experimenters by the District Commissioners, except those who are duly authorized by the Government of the United States or of that of the District of Columbia. 3. For the prohibition of vivisection in the public schools and in exhibitions for the general public. 4. For the inspection of all places of experiment by inspectors to be appointed by the President of the United States.

In a protest submitted by the Hon. James Wilson, Secretary of Agriculture, the following objections were briefly put forth: I. It has not been shown that there have been any cruel experiments performed in the District of Columbia, or that any such experiments are now in progress, or that there are likely to be any experiments of this character in the near future. II. This bill, if enacted into law, would absolutely prohibit important and necessary lines of experiments, and would greatly restrict some others which were not prohibited. III. This legislation is unanimously opposed by the great scientific bodies of the United States. IV. This bill would discourage and injure the investigations of this Department by placing the experts under the espionage of inspectors not connected with the Department, by requiring reports to be made in detail to the Commissioners of the District of Columbia, by imposing heavy penalties for any experiment which varies in any way from the lines laid down in the bill. V. It has not been shown that existing law is insufficient to prevent any form of cruelty.

There is but one clause in this bill which can meet the approval of science; that prohibiting vivisection in public schools and before the general public. Nothing is to be gained by such exhibitions. They only serve to stimulate the morbid curiosity in man and to shock the tender sensibilities of the child.

It is not difficult to see how the passage of this measure would quell the spirit of scientific research and retard to a great degree the vast benefits to humanity which medical discoveries are now giving. Had Jenner, Pasteur, Koch and Behring been restricted in their researches by a narrow-minded sect, the world would have paid a forfeit of thousands of human lives. And it is undoubtedly true that a large proportion of the anti-vivisectionists of to-day have availed themselves of the discoveries of Jenner, also that the anti-vivisectionist mother, whose child is dangerously ill with diphtheria, had she a soul, would grasp the chance of saving the little one's life, which Behring can hold out to her, through the very means which she is so relentlessly assailing.

The main trend of this bill is that scientists are brutal in their investigations upon the lower animals. This is absolutely false. They are as humane in the treatment of the dumb beast as the physician is tender in the care of the child who has not understanding.

We earnestly hope that broad-minded and just law-makers will look at this question with wide open eyes and not with the stilted vision of a narrow, and what it has proven itself to be, a malicious class.

Medical News.

MARRIED: FILLMORE-MOORE. — At Bennington, Vt., on Wednesday, October 6, 1897, Dr. Leland L. Fillmore (A. M. C., 1896) and Miss E. Josephine Moore.

GASTRITIS LACERTILIAN. — Philadelphia presents the latest curiosity in gastric pathology. A patient who had suffered from gastric disorder for more than five years, and had tried many lines of treatment without success, received from his physician medicine which, acting as an emetic, brought up thirty-six lizards two to three inches in length. The attending physician, who vouches for the truth of the story, believes that the lizards, as spawn, gained entrance into the system with the well water, and that the ova were developed in the stomach. As the symptoms have not entirely disappeared, the advisability of gastrotomy is being considered.

ALBANY MEDICAL COLLEGE. — The following provisional four-year curriculum and statement of time devoted each week to the different branches was issued September 28, 1897:

FIRST YEAR.

1. ANATOMY — three lectures; one recitation; ten hours dissection, six to ten weeks. 2. Chemistry and Physics — three and a half lectures; four hours laboratory; one recitation. 3. Physiology — two lectures; one recitation. 4. Histology — one lecture; four hours laboratory; one recitation. 5. Materia Medica — two lectures; one recitation. 6. History of Medicine — one lecture, half the term. 7. Pharmacy — one lecture. 8. General Surgical Clinic — two hours. Lectures 13; laboratory 8 hours; recitations 5; clinics 2.

SECOND YEAR.

1. ANATOMY — three lectures; one recitation. 2. Organic Chemistry — two lectures; one recitation. 3. Physiology — two lectures; one recitation. 4. Therapeutics — one lecture. 5. Medicine (gen. symptomatology) — two lectures; one recitation. 6. Surgery (minor and bandaging) — two lectures; one recitation. 7. Pathology — one lecture; four hours laboratory; one recitation. 8. Physical Diagnosis — one lecture. 9. Clinics — one hour medical; two hours surgical. Lectures 14; laboratory 4 hours; recitations 6; clinics 3.

THIRD YEAR.

1. PRACTICE OF MEDICINE — three lectures; one recitation. 2. Bacteriology — four hours laboratory; one recitation. 3. Clinical Microscopy — two hours laboratory. 4. Therapeutics — two lectures; one recitation. 5. Electro-Therapeutics — one lecture. 6. Obstetrics — two lectures; one recitation. 7. Pediatrics — one lecture. 8. Diseases of the Nervous System — one lecture: one clinic. 9. Surgery (pathology, operative, fractures, dislocations) — three lectures; one recitation. 10. Clinics — two hours medical; two surgical. Lectures 13; laboratory 6 hours; recitations 5; clinics 5.

FOURTH YEAR.

1. PRACTICE OF MEDICINE — two lectures; one recitation. 2. Diseases of Nervous System — one lecture; one clinic. 3. Gynæcology — one lecture. 4. Obstetrics — one lecture; one recitation. 5. Surgery (including orthopædics) — three lectures; one recitation. 6. Medical Jurisprudence, Hygiene — two lectures. 7. Specialties — one recitation. 8. Conferences — one medical; one surgical. 9. Insanity — one lecture, half the term. 10. Special Clinics — eight hours. 11. Clinics — two hours medical; three surgical. 12. Section Work — four hours. Lectures 11; recitations 4; conferences 2; clinics 14; section work 4 hours.

ADULTERATION OF FOODS AND DRUGS. — The Division of Chemistry of the United States Department of Agriculture, under authority of Congress, is investigating the extent and character

of food and drug adulterations, and is desirous of securing all the information possible on the subject. A. J. Wedderburn, the special agent appointed to inquire into and report upon this matter, writes to request physicians that they kindly furnish the department all possible information in regard to adulterations, together with any suggestions as to the best remedy for the evil.

Answers are desired to the following questions:

(1) Do you know of any new adulterant? If yes, state what, and how used.

(2) Would a national food and drug law assist in preventing adulteration?

(3) Would uniform food, drug, and pharmaceutical laws tend to promote efficiency and purity?

(4) Please suggest what would best promote the interests of consumers and legitimate manufacturers and dealers.

(5) What is your opinion as to the extent of damage done legitimate business by imitation of brands, packages, etc.?

(6) To what extent do sophistication, misbranding, and injurious adulteration exist?

(7) Have State laws aided in preventing adulteration? To what extent?

(8) Would a national law assist State officials in properly executing the local laws?

(9) Have adulteration, sophistication, and misbranding increased or decreased?

Obituary.

CALEB LYON, M. D.

Dr. Lyon died at his home, Lyonmere, Rossville, Staten Island, September 11, 1897, of a complication of heart and kidney disease. Dr. Lyon graduated from the Albany Medical College in 1871, served as resident physician at St. Peter's Hospital, Albany, after graduation, and has since been in private practice at his home. He was fifty-five years of age.

JOSEPH B. SWETT, JR., M. D.

Dr. Swett died in Albany after a severe acute pulmonary illness, October 3, 1897. He was born March 5, 1865, at Brookline, N. H., graduated from Cushing Academy, Mass., and in 1894 from the Albany Medical College. He has since been in general practice in Albany. He was an assistant to Prof. Boyd in the gynæcological service of the out-patient department of

the Albany Hospital. He was a member of the Albany County Medical Society, Masters' Lodge No. 5, F. and A. M., and the Tenth Battalion.

MARINUS W. SEAMAN, M. D.

Dr. Seaman died at Denver, Col., September 15, 1897. Dr. Seaman was born January 11, 1830, at Glens Falls, N. Y. He attended the Glens Falls Academy and Albany Medical College, graduating in 1853. During his attendance at both these institutions he was compelled to labor in such way as he could to obtain the necessary means to enable him to obtain his education. After graduating he went to St. Louis, and later to Leavenworth, Kan. He did not locate for the practice of his profession in any place until 1854, when he began in a small village called Shipman, in Macoupin county, Illinois, where he practiced for upwards of thirty-nine years. He was married to Elizabeth Shellman, March 5, 1861. He was an ardent Republican, and attended the first Republican State convention held in Illinois in the year 1856. He was an abolitionist, and, in October, 1862, he enlisted in the Union army and was commissioned as second assistant surgeon of the One Hundred and Twenty-second Illinois regiment infantry volunteers, with the rank of lieutenant, by Richard Yates, then governor of Illinois. His only child, Allen B. Seaman, was born in January, 1862, and was about nine months old at the time his father went into the war. On September 17, 1863, Dr. Seaman was promoted to surgeon of his regiment, with the rank of major. For a time he was surgeon-in-chief for the district of Cairo. He served from the time of his enlistment continuously until the close of the war. He then returned to the practice of his profession, and continued until about four years ago, when he retired and came to Denver to live with his son. He was always greatly interested in politics, but never ran for office. During the war he was for the most part under the direct command of Gen. A. J. Smith. He participated in the following engagements: Parker's Cross Roads, Tenn., December 31, 1862; Town Creek, Ala., April 28, 1863; Tupelo, Miss., July 14, 1864; Nashville, Tenn., December 15 and 16, 1864; Blakely, Ala., April 3 to 9, 1865. He was a member of the military order of the Loyal Legion of the United States, Commandery of Colorado.

Book Reviews.

Traumatic Injuries of the Brain, by CHAS. PHELPS, M. D., Surgeon to Bellevue and St. Vincent's Hospitals, New York. A volume of 582 pages, published by D. Appleton & Co.

A careful perusal of its pages notes the fact that an enormous amount of labor and thought has been given this subject by the author, and the conclusions reached by him, after such exhaustive work, may be regarded as authoritative. We believe that this individualizing of a surgical work to certain regions of the body is much more satisfactory to the practitioner than to be given "treatises," in which many pages are filled with old material and cuts, primary principles and pictures of instruments.

In his work Dr. Phelps has included a fully detailed chapter on Fractures of the Skull and a profuse chapter on bullet wounds of the same, so that it seems the title should have been "Injuries of the Head." His efforts to include these conditions of the skull with the intra-cranial lesions, and considering them separately, lead to much repetition in substance, especially as far as the treatment is concerned. We know that rarely are we called to treat a fracture of the skull without having as an associate condition one or other of the intra-cranial lesions. If these had been considered more in conjunction with each other we believe all would have been made much clearer.

In the early chapters Concussion and Compression, the old and well-standing terms, are set aside for those of Contusion and Laceration, in the belief that no such condition as a mere shaking up or concussion does ever occur. That actual contusion or bruising is the least intra-cranial lesion possible is questionable, and hardly accounts for those cases hitherto termed concussion, where but slight symptoms prevail, from which recovery ensues in a few hours. Fissures of the petrous bone, being termed a compound fracture, and a cirrhotic condition of the brain substance coming on in a part of the organ contiguous to an already destroyed portion, are unique. In Symptomatology and Diagnosis we are given some new features. The unreliability of the pupils as a diagnostic point is settled, the old valued sign of stertorous respiration, as an indication of cerebral hemorrhage, set at nought, while temperature is placed high as a standard for diagnosis of laceration of the brain structure; its rise, steady, and to a high degree, always noted. The speech center is shown not to be affected after ordinary laceration in its locality, but requiring complete destruction as necessary to affect it. In Diagnosis especial attention is called to the necessity of thoroughness in discriminating alcoholic coma from intra-cranial lesion, and very properly so. In Prognosis, fracture of the base has been shown to come out of the former state of almost invariable fatality to nearly 50 per cent. recoveries. In Treatment, aseptic rules are strenuously directed, "unless the exigencies of a case compel immediate interference, under circumstances in which ordinary appliances are unattainable," an extraordinary and inexcusable circumstance.

The chapter on pistol-ball wounds of the head is beautifully illustrated by reproductions of photographs, and is very valuable, especially in a medico-legal sense. In locating bullets, advice "teeters" considerably regarding the use of the probe, and the use of needle punctures to determine their position, ending rather radically regarding the necessity of doing so, no matter where. In these directions the statement is made that when anterior, the eye with its appendages may be taken out, the ball extracted and the organ replaced without loss of vision, a most remarkable procedure.

The volume closes with the details of 300 cases of head injury, which present much of interest to one perusing the same for illustrative cases, and as an appendage to the work are highly valuable. Thoroughness to the point of extravagance notes each voluminous chapter, but makes the entire work very complete. C. B. HERRICK.

Transactions of the Medical Society of the State of New York for the Year 1897. Pages 584. Published by the Society.

This volume contains the proceedings of the ninety-first annual meeting of the Medical Society of the State of New York. Four hundred and eighteen pages are filled with the scientific papers, a mass of valuable medical work which unfortunately was crowded into sessions lasting a day and a half. Among the obituaries is that of the late Dr. Thomas Hun. Dr. Samuel B. Ward thus characterizes him: "While Dr. Hun was best known through his professional prominence, his broad erudition, his earnest interest in all matters that affected the charitable and educational interests of his city, his firmness of character and his strict adherence to principle would have made him a man of note independent of his professional eminence. As a trustee of the Corning Foundation for Christian Work in the Diocese of Albany and the Albany Academy, his counsel was always eagerly sought and his advice considered almost invaluable. Although apparently somewhat austere in manner, he was really most genial and full of humor, and was respected by all who had the privilege of knowing him well." The officers of the society are to be congratulated upon the handsome appearance of the volume, creditable alike to the members of the society and the contributors.

Health of Body and Mind — Some Practical Suggestions of How to Improve Both by Physical and Mental Culture. By T. W. TOPHAM, M. D. Pages 296. Brooklyn Borough, New York: T. W. Topham, Brooklyn Eagle.

This handsome little volume consists of practical advice about the means by which to develop to the highest degree our physical being, and thus attain to and retain health. The author dwells strongly upon the fact that disease is a resultant of a predisposing cause, *i. e.*, an impaired constitution and an active pathologic agent, and that by developing to the utmost the physique the predisposing cause is partly or entirely removed, and the system is thus enabled to throw off or to minimize the morbific agents which may have gained entrance. He therefore recommends and describes simply, but completely, various series of breathing,

relaxing and muscular movements, abundantly illustrated by twenty-eight photographs. Each of these movements is simple, and can be carried out without the use of any apparatus. The volume well repays its perusal and contains many suggestions which could profitably be employed in practice.

Typhoid Fever and Its Abortive Treatment. By JOHN ELIOT WOODBRIDGE, M. D. Cleveland: The Cleveland Medical Publishing Company. 1896.

The objects of this book are to show that typhoid fever can be aborted, to give directions for aborting it, and to impress upon physicians the great harm resulting from the improper care of sewage. The author states that the book has been written in defiance of the theories of the disease of which it treats; that he will not attempt the task of explaining how his method of treatment produces its results, but that a great number of cases have been successfully aborted; and that he has had no deaths from typhoid since the adoption of the plan which he now fully describes.

Two hundred of the three hundred and sixty-eight pages consist of reprints of twelve papers presented to medical societies, which are repetitive and polemic, and whose subject-matter could have been condensed into one short chapter. These are followed by a chapter on diagnosis and prognosis, in which the importance of early diagnosis is emphasized, the symptoms are given in detail, the diseases with which typhoid is apt to be confounded are outlined at length, and a list of the earliest symptoms is added, on the supervention of one or more of which the "physician should be put on the *qui vive*, for at this time, if never after, the patient may be cured — the disease aborted." These symptoms are: "A slight but persistent headache; a scarcely noticeable mental hebetude; a loss or even an unnatural increase of appetite; a little diarrhœa; a little dizziness; ringing in the ears; epistaxis; weakness; chills or chilly sensations; the diluted chills of Sir Andrew Clarke; pain in the back and limbs; the bowels may be constipated, or there may be mild or copious diarrhœa. The temperature may be little above normal, the pulse sluggish or slightly accelerated."

The treatment advocated by Woodbridge consists of active elimination from the bowels, together with the use of antiseptics. The tablets at first prescribed contain podophyllin resin (gr. 1-960), calomel (gr. 1-16), guaiacol carbonate, menthol (of each, gr. 1-16), and eucalyptol. Formula No. 2 is changed in the quantities, and thymol is added. Formula No. 3 does not contain the cholagogues. The tablets of No. 1 are to be given every fifteen minutes during the first forty-eight hours. At the end of twenty-four hours formula No. 2 is used, one tablet being administered every fifteen minutes, together with one or more tablets of No. 1, until five or six evacuations of the bowels have been procured during this and the following day. When sufficient elimination has been produced — on the third or fourth day — No. 3 is to be used. The details of the treatment cannot be given here, but in the outline above reproduced the prin-

ciple is shown. The objections have been concisely summed up by Osler (*The Principles and Practice of Medicine, Second Edition, page 40*): "If, as in cholera, the bacilli developed and produced the poison in the intestinal contents, there might be some reasonableness in this method, but the bacilli multiply in the intestinal walls, and in the mesenteric glands, and in the spleen. They are sometimes not found in the stools until the end of the second week. * * * To check bacterial activity * * * would be a disastrous interference with the normal processes in the bowels. No one has been foolish enough yet to claim that so-called intestinal antiseptics can kill the pathogenic and spare the useful organisms."

Woodbridge has been aggressive in urging his plan of abortive treatment, and his book has been published in response to the many requests for reprints of his papers. His published results have received wide attention, but it is to be feared that the ill-nature shown throughout his writing, the weakness of his argument, and the poor style of his book will prepossess unfavorably many who might have been disposed to credit the claims so urgently pressed.

Current Medical Literature.

Influenza. — Dr. George Gresswell, in *The Lancet* (*Sept.* 18, '97), says while patients skilfully treated do not as a rule succumb to influenza, it may, however, be classed as a minor scourge, as its sequelæ are often distressing and debilitating. Formerly it was held to be a specific inflammation of the respiratory and alimentary tracts almost exclusively, but now the involvement of the nervous system is unquestioned. Dr. Gresswell looks upon it as a general infection of the whole system, the blood being the medium of distribution of the poison.

Horses and most other domestic animals, including cats, are liable to be attacked. The air-borne theory of transmission is most probable. A peculiar feature is that the healthier the individual when exposed to infection, the more liable will he be to fall a victim. One attack does not afford immunity, but, on the contrary, renders one more susceptible. The period of incubation is probably only a few hours, and seldom or never more than a day or two. The invasion is usually sudden, and the most common first sign is an itchiness and smarting of the eyes and eyelids. This itching is followed by a conjunctivitis and copious lachrymation. The catarrh extends to the nose and produces a severe coryza. Then there are chills, lassitude and prostration, and often a fear of impending death. There is generally a painful headache. A feeling of nausea, sometimes with vomiting, is nearly always present. Pains in the body and limbs may follow, and the patient complains of aching all over. The temperature is variable. Soon sore throat and hoarseness come on, the throat at first being dry, but soon there is expectoration, which extends until bronchitis supervenes. Diarrhœa and epigastric pain and tenderness may be present. Vertigo is not uncommon. The most characteristic symptom is the intense nervous prostration and feeling of utter helpless-

ness and misery. Dr. Gresswell, for convenience, classifies influenza into four types: (1) Pulmonic, (2) abdominal, (3) neurotic, (4) rheumatic. Often a case presents symptoms of all four types.

Dietetic and hygienic management is of great importance in the treatment. The recovery will be quicker, with absolute rest in the recumbent posture and fluid diet.

Special regard should be paid to the treatment of symptoms. The presence of uric acid should be combatted with alkalies. Antifebrin, phenacetin, etc., in small doses, to arrest the headache. For severe pains in the limbs a large dose of bicarbonate of potash, coupled with opium or with iodide of potash, or a mixture of the bromides. Stimulants should be prescribed with care. Quinine is not recommended until the stage of convalesence is reached. The local and general use of disinfectants is advised. H. L. K. S.

A Simple Procedure to Control Post-Partum Hæmorrhage in Atony of the Uterus. — Kumpf, in the *Centralblatt für Gynäkologie, March* 20, 1897, reports the successful result of a new procedure in two cases, and urges its further trial. He stands at the right side of the patient, facing her, stretches the arm and hand with all joints fixed, and with the finger-tips at nearly a right angle with the abdominal wall, at a point between the symphysis and navel, presses strongly and with vibrating movements, the repetitions following each other as quickly as possible, and originating at the shoulder joint. After a few seconds the uterus comes plainly forward, and he then changes the vibratory movement to correspond with the altered position of the patient, to the posterior surface of the uterus, and compresses this against the symphysis, for about ten seconds, after which the uterus is completely contracted. If the uterus be again relaxed, the manipulation may be twice or thrice repeated after a short pause.

The Iodine Test for Semen.— Dr. Wyatt Johnston, in the *Boston Medical and Surgical Journal, April* 8, 1897, reports experiments upon the test announced by A. Florence, of Lyons. The reagent used is a solution of iodine and potassium iodide, in proportions which correspond to the formula KI^3. The formula is as follows:

Iodide of Potassium, C. P. - -	1.65 grammes.
Iodine - - - - - -	2.54 grammes.
Distilled Water - - - -	30. c.c.

Good results can also be obtained with one-half the amount of iodine (1.27 grammes, equivalent to KI^2) but the iodine must be in excess. The solution keeps perfectly well in glass-stoppered bottles. It should be used cold, as warmth interferes with the reaction.

When a drop of the liquid obtained by moistening a seminal stain is placed alongside a drop of the above solution on a glass slide or watch glass, so that the edges of the drops come in contact, there appear almost immediately large numbers of peculiar, brownish-red, pointed

crystals. These are rhomboidal, and resemble so closely in form, size and color the hæmin crystals that they could be readily mistaken for them, though a careful examination shows points of difference. They also form small turnstile groups or crosses, in the manner which characterizes the hæmin crystals. The crystals are sparingly soluble in cold water, and very soluble in warm water, reappearing again on cooling. On exposure to the air, they gradually disappear, but reappear on adding a fresh quantity of the reagent. They are readily soluble in ether, alcohol, acids, fixed acids, alkalies and iodide of potassium; they resist solution in very weak ammonia solutions. For their formation to be typical and abundant, considerable dilution is necessary. So far as has been observed, the reaction is not obtained with any other fluid of the body, such as blood, urine, sweat, saliva, tears, bile or milk, with pus or nasal or vaginal mucus; nor with the secretion of Cowper's glands. The sperm of animals is stated by Florence not to give the reaction. Johnston has observed a pseudo-reaction of doubtful nature with some forms of animal serum.

The independent value of the test is summarized by Florence as follows:

(1) From the occurrence of the reaction alone, without discovery of fragments of spermatozoa, the stain is probably a seminal stain.

(2) From the coincidence of well-formed and typical but detached heads of the spermatozoa, along with the reaction, there is positive presence of semen.

(3)With débris of spermatozoa, or even with perfectly formed heads, but without the reaction, the presence of human semen is not certain.

In the same journal, W. F. Whitney reported further observations upon Florence's reaction. Crystals were obtained from stains which had been dried for a few days, several months, and two and a half years. Stains from any other of the ordinary fluids, etc., of the body (urine, fecal material, saliva, milk) failed to give the reaction, as well as from leucorrhœal and gonorrhœal discharges. Trials were also made from the contents of human testicles, epididymis and seminal vesicles without any result; except in one recently excised testicle a few small crystals were thrown down by the fluid squeezed from the epididymis. The fluid from a spermatocele containing large numbers of spermatozoa was also negative. The fluid expressed from the prostate was without action, both when used alone or mixed with the secretion from the seminal vesicles. From the epididymis of a rabbit an abundant precipitation of small crystals was obtained; and from that of a dog there was no result. A preparation was made from a spleen from a case of leukæmia, in which were numerous Charcot-Leyden crystals, with negative result. As the reagent gives a precipitate with many of the alkaloids (morphine, strychnine, etc.) and their salts, its chief value is a negative one. If a positive result is obtained, the further step of demonstrating the presence of spermatozoa must be taken before it can be demonstrated in court. The following method has been used by Whitney:

A small bit is cut from the cloth on which is the suspected spot, or if it is on a hard surface, a little is scraped from it. This is placed on a cover-glass, wet with a drop of distilled water, in which it is carefully teased apart with fine needles and the larger fibres removed. The drop of fluid is carefully evaporated over a flame and fixed to the surface by rapidly passing it through three times. Upon the film thus formed are poured a few drops of an aqueous solution of eosine, which is allowed to act for a few seconds, and then washed off with distilled water. An equal amount of a strong aqueous solution of methyl green is then poured on and gently heated over the flame until it steams. It is again washed, dried and mounted on a drop of Canada balsam dissolved in xylol.

When entire, well-preserved spermatozoa are found, there is no difficulty in their identification. But when the stains have been dried for some time, it is usually difficult to obtain them, for the heads are then very easily broken from the tails. With the method of differentiation certain characters of the head can be made out, which leaves no doubt as to their identity. The whole head does not stain alike. At the base is a hemispherical portion, which stains deep green, and the anterior part and the tail take the red color of the eosine. There is no other oval spore or cell which has an eccentric hemispherical nucleus. In all other animals than man, the head stains of a very diffuse light green, with only a very narrow zone of a pale red color about it. The shape of the head is more pointed (wedge or lance-shaped) in man, and it is rounder (shovel-shaped) in the lower animals.

Experiments with Electro-guaiacol Anæsthesia.— R. Marcus, in *Deutsche med. Wochenschr., March* 4, 1897, comes to the following conclusions, based on experiments with 40 cases:

(1.) By cataphoresis, guaiacol-cocaine can be carried into the skin and subcutaneous tissues, and causes complete anæsthesia (neither the electric current alone, nor the guaiacol-cocaine solution causes such deep anæsthesia). (2.) The anæsthesia is produced after an application, for 7½ minutes, of guaiacol-cocaine solution with the current, and continues for 10-15 minutes. (3.) The strength of the current necessary to produce complete anæsthesia varies between 1.2 and 4 milliamperes. (4.) Patients remained entirely conscious, hardly felt the current, did not feel the slightest pain during teeth extractions and other operations, and there were no unpleasant after-effects. (5.) Guaiacol localizes the cocaine solution, being a non-transmitter, much retards the absorption of the cocaine, and prevents injurious after-effects. C. F. T.

Asthenic Bulbar Paralysis. — Strümpell describes this form in the *Deutsche Zeitschrift für Nervenheilkunde,* Bd. 8. The disease differs from progressive bulbar paralysis in not presenting a permanent paralysis in the nuclear distribution of the medulla, but in an extremely gradually developing tremor in the region of distribution of the affected nerves. After rest, *e. g.*, in the morning, the nerves functionate fairly well, but

they become rapidly exhausted. This exhaustion becomes more pronounced and increases to a condition of persistent tremor, which tends to attacks of suffocation and may suddenly terminate fatally. Atrophy has not been observed. Analogous symptoms appear in the general musculature of the body. During menstruation the symptoms are more pronounced. No anatomico-pathological changes have been discovered. Even anatomical changes are not present, and an intoxication may be suspected. Similar symptoms appear as a manifestation of exophthalmic goitre. The prognosis is dubious. Strychnine and other nervines are wholly useless, and no satisfactory treatment has been found. The term "asthenic" is used in the absence of any definite anatomical basis of the disease.

Sulphate of Duboisine in Epilepsy.—Cividali and Gianelli report that sulphate of duboisine diminishes the number and intensity of epileptic attacks. The drug was administered in doses of 1-60th of a grain, increased to 1-20th, and the most favorable results were obtained in the cases of epilepsy associated with psychical disorders. — *The Lancet, January* 30, 1897.

Practical Therapeutics.

Gastralgia :—

℞	Codeinæ phosph.,	gr. ¼
	Bismuth subnit.,	gr. v
	Sacchari lact.,	gr. iij

M. Sig: This as a dose every two hours.—*Ewald.*

Bitter Tonics in Chronic Gastritis.—

℞	Tinct. nuc. vomic.,	f ʒ i
	Resorcin resublim.,	ʒ ij
	Tinct. gentian.,	f ʒ v
	Syr. simplic., q. s. ad	f ℥ v

M. Sig: Tablespoonful every two or three hours.—*Ewald.*

℞	Tinct. nuc. vom.,	f ʒ i
	Decoct. condurango,	f ℥ iv

M. Sig: Tablespoonful half an hour before meals. —*Ewald.*

Sedative and Antiseptic Mixture in Carcinoma of the Stomach.—

℞	Cocain hydrochlor.,	gr. iv
	Chloral hydrat.,	gr. xl
	Aq. menth. pip.,	f ℥ jss
	Aquae, q. s.	ad f ℥ iij

M. Sig. Tablespoonful every two hours.—*Ewald.*

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Original Communications.

WHAT CONSTITUTES AN INSANE CRIMINAL, AND WHAT STATUS DOES HE OCCUPY?*

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The number of insane held in custody in the State of New York is about twenty thousand. Of this total nearly seven hundred may be classified as insane criminals. Some have been sentenced by the courts, and while in prison have been declared insane; others, instead of receiving sentence to prison, have been confined in State hospitals to await trial, criminal proceedings having been suspended pending their recovery from mental derangement. They may then be roughly divided into the convicted and unconvicted classes. There is a mental, moral, and physical difference between the two divisions, which is decidedly in favor of a higher development of these qualities among the unconvicted. It has been claimed that the convict, as a rule, belongs to a degenerate class. However that may be, it is a fact that when you have brought together such convicts as become insane, you have grouped a body of human beings who are markedly defective. Moreover, insanity is very prevalent among convicts. The three principal prisons in the State of New York receive and have in custody a total population of about 4,700 inmates each year, and during this time there are upon an average fifty-four commitments to the Matteawan State Hospital, showing that about one in eighty-seven become insane annually.

*Read before the Prison Association of New York, at its annual conference, held in New York city, October 7-9, 1897.

A small percentage of these patients, although they have been sentenced to prison, do not really belong to the criminal class. By reason of insanity they perpetrated some crime for which they have been improperly tried and convicted. Some of them have unsuccessfully interposed the plea of insanity as a defense at the time of their trial, while in others the fact of their having been insane at the time of their act does not become evident until after imprisonment. As a rule, such convicts are not disposed to criminal pursuits, but the crime being the result of disease is in the nature of an accidental circumstance. Usually the charge against them is for some offense against the person, the outgrowth of insane ideas of persecution. It is true they are dangerous men, although not through criminal propensities, but rather because of their delusions. Homicidal ideas are commonly prevalent among them. Numbers of convicted life men are included in this category, who have been found guilty though insane. Confinement in prison and brooding regretfully over their act undoubtedly drives some to madness, but this cannot account for the large number of men sentenced for life in whom reason becomes dethroned. Twenty-three per cent. of all the life men in the State of New York are confined in the State Hospital for the Criminal Insane, having been transferred from the prisons; and of these the great majority were insane at the time the homicidal act was committed. Insanity is responsible in a large degree for a great number of murders and for serious assaults upon the person.

Occasionally foreigners are also sent to prison suffering from an attack of insanity, which is not recognized by the courts at the time of their trial by reason of the difficulties of language.

If we eliminate all persons, therefore, in whom insanity existed at the time of the criminal act and before conviction, we shall have remaining the general convict body, made up of men who were sane before commitment to prison. Many of these are old offenders, and among them is the habitual criminal. They are an unstable lot mentally, and during confinement many become deranged. We find associated with this derangement a condition of general mental and physical enfeeblement, congenital in its character. Many of them have never been bright, and they are deficient in natural ability and in education. Their condition is

due both to heredity and early environment. The family history, as a rule, is not good, and the opportunities for education have either been denied or their mental capacity would not admit of their receiving it. They are fixed in criminal habits, and when discharged from prison become recidivists. If they develop insanity during imprisonment, they are sent to the Matteawan Hospital, where they often recover. It is a question, when they have been restored to their normal state whether they are fit subjects for return to the custody of the prison to be released upon the expiration of their term of sentence, or whether they should be retained at the hospital as still insane or mentally defective. In many cases the history of the patient through his numerous convictions shows that, because of his criminal propensities, his mental calibre is not great enough to keep him out of prison, and that he is a dangerous person to be at large. When actually insane his delusions are apt to partake of the nature of ideas of persecution, and when he has apparently recovered, it is difficult to determine whether these false beliefs have entirely disappeared or simply become quiescent. The natural state of the man renders this a more difficult task on account of his low order of intelligence and mental development. The individual history should govern largely in determining the present mental condition in cases wherein there is an element of doubt. If the question of responsibility were oftener raised in the courts, and the length of confinement made more dependent upon the character and record of the individual than upon the crime, many of these persons would be sentenced for very much longer terms and others committed to lunatic asylums. If a man knew that his character as well as the act was to be considered, it would have a decidedly deterrent influence upon him. The old idea of punishment is passing away, and security of life and property is better effected by methods which look to the reformation of youthful first offenders, the lengthy sequestration of the confirmed criminal, and the detention in custody of the insane convict beyond the expiration of his term until he is recovered or considered fit to be at large. In all States where hospitals for the criminal insane have been established, it is the practice to commit to their custody all convicts who become mentally deranged. If they recover before the expiration of the term for which they were sentenced, they are

returned to the prison to serve the remainder of their terms. If they remain insane, they are detained at the hospital beyond the period at which their terms of sentence end, and until they recover or are sufficiently improved to be released with a reasonable degree of safety. Of such unrecovered cases about 175 are now detained at Matteawan, several of them being from ten to fifteen years past the time at which their sentences expired. During the past two years there have been discharged fifty convicts who were thus held over time. Of this number fifteen were removed by death and twenty-one transferred either to other State hospitals, to homes in foreign countries, or to the custody of friends in this and other States. The average duration of time added to their terms of imprisonment by being thus retained was about one year three months. This includes both those who died and those released to the custody of other institutions and friends, who would otherwise have been detained for a longer period. Only fourteen of the fifty were discharged as recovered and absolutely released. When we consider that the average length of sentence in the three great prisons of the State, allowing for commutation for good conduct and excluding life sentences and execution, is only about three years and ten months, we shall find that the insane convict who is so unfortunate as to remain unrecovered at the end of his sentence has an average duration added to the length of his term of about 33⅓%; and if his delusions are such as to render him unsafe to be at large, he is practically confined for life. In this manner some of the criminal elements who are dangerous by reason of insanity are sifted out and remain in custody. Moreover, the hospital affords to hopeful cases among convicts the same opportunity for relief and cure as is provided to the insane generally throughout the State. When viewed as a result of insanity, acts which have been credited to viciousness awaken the sentiment of pity and sympathy rather than of resentment and retribution. Still it is generally recognized that the subject should be kept within the restraint of a hospital for the insane as long as he is a menace to the community and incapable of self-control. To summarize, the insane convict is made up first of those persons who are not really criminals, but who have been mistakenly adjudged such, their crime having been the result of insanity and not of free choice; and

secondly of those persons whose crimes were committed by sane men from sane motives, but who as a rule are deficient in mental and physical endowment, and who in prison become insane.

In the State of New York the question of insanity among convicts is determined in the following manner. The prison physician certifies to the warden that in his opinion a certain convict is insane. Upon such certificate the warden applies to a judge of a court of record for the appointment of two medical examiners not connected with the prison. If they confirm the report of the prison physician, the judge thereupon orders the commitment of the convict to the Matteawan State Hospital, where the patient is placed under appropriate medical treatment. The statute here recognizes the needs of the individual as well as the safety to society. If the man recovers during his term, he is returned to prison to serve the remainder of his sentence, but if he does not so recover he is held indefinitely, even for life, unless sooner determined to be a fit subject for discharge either absolutely or into the custody of responsible friends.

Aside from the insane convict there is another class, which, for lack of a better term, are known as insane criminals, but who would more properly be styled insane offenders. In this division is comprised a most dangerous class of individuals, who have excited a vast amount of controversy on the subject of responsibility in mental disease. Members of both the legal and medical profession have written much upon this subject, ever since Hadfield made his assault upon King George the Third. Whenever the question of insanity arises, the test of the courts which has been generally applied has been, " Did the accused know the nature and quality of his act, and did he know that it was wrong? " As a rule, the insane person has a very good knowledge of right and wrong in the abstract; and while in general he may be fully aware of the enormity of homicide, yet in relation to *his* act he often holds very erroneous beliefs. There is often this point of difference between the sane habitual criminal who subsequently becomes deranged and the insane offender, namely, the former chooses a life of crime knowing it to be unlawful, and the act for which he is arrested is probably only one of many similar offenses which remain undetected; while the latter's transgression may be the only serious one in a life time, and, moreover, he has usually

striven to avoid and to resist his impulse to commit it. Some eminent jurists have said that if a person is capable of curbing himself for some length of time from the commission of an act which he feels to be wrong, that the very fact of such self-restraint implies the exercise of will power and a knowledge of right and wrong, which renders him fully responsible; if he could control his actions for a week or a month, why could he not have finally refrained from doing wrong? It might with equal truth be said that, because a patient ill with a fever was able to walk about for days, his eventual confinement to bed was something which he could have successfully combated. Yet we know that continuance of disease leads to death, which it is in the power of no man to avert. In the same manner progressive mental disorder often leads to criminal acts. I have no doubt that there are walking about in every city to-day men who are insane, and who are resisting homicidal delusions or impulses to do harm. We know that many persons have traveled about from place to place to escape the designs of imaginary enemies upon their lives; many others have believed themselves poisoned, hypnotized, or persecuted, and have tried to resist insane impulses to do harm. We all know the distinction between transient, insistent, and fixed ideas, and we recognize their final overmastering power. The transient thought which enters the brain may only startle a person and be dismissed, or it may leave vague suspicion and distrust. Eventually the insane thought may so frequently thrust itself upon the mind that by its constant reiteration it becomes a dominant and fixed idea, and in the end a controlling force. In many cases a man is at last so overcome by stress of disease that a violent or dangerous act is a natural outcome. Such a person may know the nature of his specific act; that is, whether it is one of wounding or killing or setting fire to buildings or appropriating property. The quality of the act, however, is subjective, and depends upon the mental processes which lead to its commission. If the act was revengeful, vengeance was for imaginary or delusional wrongs which finally became unbearable. If the act was in his opinion one of self-defense, he was defending himself against an enemy which existed only as a figment of his brain. Quality implies judgment, and a judgment founded upon such false premises cannot be sound.

If his delusions influenced his judgment he cannot be said to have a true understanding of the subject. Nor does the knowledge that the act is wrong, in the sense that it is unlawful, carry with it responsibility. The insane person who shot at the Rev. Dr. Hall stated that he knew the act was not lawful, but he felt that he was hypnotized, and while not intending harm, he took this method of attracting public attention to his case, hoping that its exploitation would free him from a band of conspirators who were working injury upon him. In these cases the quality of the deed is frequently the decisive test. No single act can be termed insane, but all the circumstances and conditions which produce it must be carefully considered in order to fix its quality. There may be a great deal of difference between the act of an insane man and an insane act. Many acts of the insane are perfectly rational. This seems a paradox, and is a fact not generally understood. Many believe that because a patient is able to write a coherent letter he ought not to be confined in a lunatic asylum; even judicial officers have expressed such an opinion. In judging of any act, the chief point is to determine what are the premises upon which to base a reason for it. To pronounce a correct opinion of a person's mental condition requires a very complete knowledge of the man, and renders each case a most interesting psychological study. The insane offender may be a very dangerous man, but he is not criminal, though so termed.

While in some cases of insanity the legal test of responsibility is not easy of application, in others it is very simple. Insane offenders may consist of paranoiacs, chronic maniacs, paretics, epileptics, cases of melancholia and of dementia, imbecility, and idiocy. It is in paranoia, chronic mania, and melancholia that premeditated acts of a homicidal or dangerous nature are most often committed. The patient is governed by systematized delusions which it is not always an easy matter to discover. Patients thus affected, as a rule, are cunning, shrewd, and capable of concocting plans to do harm. Their reasoning is often acute, but, as we have said, their premises are the products of a diseased brain. They are a most dangerous class of individuals and filled with high notions of self-conceit. They wish to be the center of public notice, and it is most humiliating to their pride and seems to them a rank injustice to be summarily locked up in a lunatic asylum for

life. With other members of the same fraternity to be made to feel that a like fate may await them, is far more repressive than the imposition of a sentence. A sensational trial and conviction and imprisonment for a term of years would not of a paranoic more surely than to have it unmistakably indicated that he is of no use in the world and to be confined as a chronic lunatic. No mistaken public sympathy should ever be allowed to interest itself for his release.

Paretics, as a rule, are so evidently insane, and their acts are often of so foolish a nature, or so lacking a rational basis, that their condition is usually clearly demonstrable before courts and juries.

Epileptics often commit crime while under the influence of frenzy or while in epileptic states, and retain no memory of the act whatever. Many of them are tractable during the interval, but troublesome and dangerous periodically. Many most shocking crimes have been committed by epileptics. Most of their deeds are of a sudden and impulsive character. As a rule, they are at the time unconscious of the nature and quality of the act, nor do they know that it is wrong. In fact, they are oblivious of the whole affair, and after the effects of the convulsion have passed away retain no knowledge of the occurrence. Criminal acts may also be committed, not in frenzy, but by epileptics who have reached a state bordering on dementia as the result of their disease. The main points to determine are, whether epilepsy exists, and is the patient dangerous to be at large. These conditions are very well understood as a factor in the production of the criminal insane. Epilepsy is essentially a chronic and continuing disease, and where an acquittal is had upon the ground that such an infirmity exists, the jury, in accordance with the provisions of the Penal Code, should report a special verdict to that effect, and if they acquit upon the ground of insanity "they must be instructed to state that fact with their verdict. The court must thereupon, if the defendant be in custody, and they deem his discharge dangerous to the public peace or safety, order him to be committed to the State lunatic asylum until he becomes sane." This procedure, if adhered to, would practically confine all dangerous epileptics charged with serious crime. And where a person has taken human life or made an attempt to do bodily harm,

or committed arson or any other grave offense, he should be confined as long as his malady exists, or as long as, in the opinion of a justice of a Supreme Court, it is proper to detain him.

Demented persons often commit crimes, but they are usually of a minor character, easily recognized to be the act of a feeble-minded person; nevertheless such people are often a menace to the neighborhood. They may be subject to sudden outbursts of violence or develop a penchant for acts of arson or other proclivities which render it necessary to provide for their safe custody.

It is among the feeble-minded, the degenerate, and the imbecile offenders that difficulty often arises as to their accountability and status under the law. No one would consider an idiot to be responsible. But these persons are not all idiots, and there are all grades of feeble-mindedness, and the matter is simply one of opinion derived from the history of each case. It is properly a question for the jury to decide. Medical men and others may honestly differ in their views as to any particular person. It would appear that the character of the individual as well as the nature of the crime should weigh in all cases of imbecility that come before the courts. If the criminal act is a serious one, such as murder, a commitment to prison for life in a doubtful case effectually protects society without doing injustice to the individual or his family; and it would be eminently the most proper procedure. When the offense is a minor one, and previous convictions have shown that the person is addicted to criminal pursuits, the sentence imposed should be commensurate not alone with the offense, but with the extent of the man's criminality. Such persons are largely creatures of habit. Many of them are border-line cases, and we have had the experience of receiving from the courts as patients men who, for former offenses, have served terms in the penitentiary. When a person is committed by the courts to an asylum for the criminal insane on the ground that he is an imbecile, such a commitment virtually acts as a life imprisonment, for the reason that imbecility is a permanent condition, and not subject to recovery. Occasionally, in cases of first offenses of a trivial nature, after a variable period of confinement, the criminal charge has been withdrawn and the patient discharged.

In this connection it may be interesting to compare the average length of sentence served by convicts in State prison with the average length of confinement undergone by the inmates committed by the courts to the Matteawan State Hospital. Allowing the usual deduction for good conduct, and excluding life and execution sentences, the average length of sentence served at Sing Sing is three years, nine months and twenty-four days; whereas at Matteawan the average length of detention of cases committed by the courts, calculated on the discharges for the last three years, has been five years and one month. These figures include all deaths, all cases returned to court for trial, and all transferred to other State hospitals. In this connection is appended the following table, showing the nature of the crime, the length of confinement and the termination of each "court" case discharged from Matteawan during the past three years:

COMPLETE LIST OF COURT* PATIENTS DISCHARGED AT THE MATTEAWAN STATE HOSPITAL DURING THE THREE YEARS ENDING SEPTEMBER 30, 1897.

Case number.	Sex.	Age at date of discharge.	CRIME.	Date of commitment.	Date of discharge.	DURATION OF CONFINEMENT.			Remarks on manner of discharge.
						Yrs.	Mos.	Days.	
886	M ..	40	Grand larceny, 2d degree.	Feb. 15, 1887	Nov. 1, 1894	7	8	16	Died.
1476	M ..	18	Burglary, 3d degree	Aug. 28, 1893	Dec. 13, 1894	1	3	15	Young man charged with minor offense. Recovered. Returned to court. Released.
319	M ..	72	Attempt murder	May 2, 1874	Dec. 27, 1894	20	7	25	Died.
1592	M ..	31	Petit larceny..	Oct. 9, 1894	Jan. 22, 1895	..	3	12	Alcoholism. Recovered. Returned to court and released. Has made an excellent record since.
1601	M ..	21	Assault, 2d degree.....	Nov. 9, 1894	May 23, 1895	..	6	14	Young Swede. At time of arrest was recovering from typhoid fever. Just discharged from hospital weak and confused mentally. Recovered. Returned to court and released.
956	M ..	69	Larceny, 2d degree	Dec. 10, 1887	May 29, 1895	7	5	19	Acquitted on ground of insanity. Recovered and returned home.
730	M ..	46	Assault to kill.	Nov. 22, 1882	June 17, 1895	12	6	25	Died.
1608	M ..	22	Assault, 1st degree..... .	Nov. 23, 1894	June 20, 1895	..	6	27	Recovered. Returned to court.
1667	M .	61	Intoxication....	April 20, 1895	June 20, 1895	..	2	..	Recovered. Allowed to go home, there being no further criminal charge against him.
1462	F...	40	Murder, 1st degree..... ..	July 28, 1893	July 21, 1897	1	9	26†	Killed her young child. Escaped from custody during habeas corpus proceedings at court. Recaptured. Finally recovered and released by order of court.
1547	M ..	52	Arson.....	Dec. 3, 1889	July 14, 1895	5	7	11	A merchant who burned his own property. Melancholia with religious delusions. Charge dismissed by court. Released improved.
314	M ..	59	Murder.....	Sept. 9, 1873	July 17, 1895	21	10	8	Died.
1193	M ..	57	Arson....	Aug. 7, 1891	July 24, 1895	3	11	17	Died.
1288	M ..	27	Robbery, 2d degree.....	Jan. 24, 1889	Aug. 16, 1895	6	6	22	Died.
1492	M ..	26	Forgery, 2d degree.....	Nov. 24, 1893	Aug. 23, 1895	1	8	29	Died.
889	F...	34	Murder.....	Dec. 10, 1886	Aug. 26, 1895	8	8	16	Died.
1706	M ..	24	Attempt at suicide.....	July 8, 1895	Sept. 3, 1895	..	1	25	Acute alcoholism. Not insane. Released with consent of Court and District Attorney.
1697	F...	20	Assault, 1st degree.....	June 11, 1895	Sept. 8, 1895	..	2	27	Cocainism and alcoholism. Returned to court for trial and there released.
1642	M ..	28	Forgery, 2d degree.....	Feb. 19, 1895	Sept. 14, 1895	..	6	25	Alcoholism. On trial, found not guilty by reason of insanity. Released upon recovery.

* "Court" patients are unconvicted cases charged with crime but declared irresponsible by reason of insanity; and committed by order of court.
† Length of time in actual confinement.

COMPLETE LIST OF COURT* PATIENTS DISCHARGED, ETC.—*Continued.*

Case number.	Sex.	Age at date of discharge.	CRIME.	Date of commitment.	Date of discharge.	DURATION OF CONFINEMENT.			Remarks on manner of discharge.
						Yrs.	Mos.	Days.	
1516	M ..	37	Arson.	Feb. 26, 1894	Sept. 23, 1895	1	6	27	Recovered. Returned to court and there released.
313	M ..	80	Manslaughter..... ...	May 14, 1873	Nov. 1, 1895	22	5	17	Died.
1335	M ..	52	Larceny, 1st degree.. ...	May 31, 1892	Dec. 3, 1895	3	6	2	Died.
1728	M ..	24	Grand larceny, 2d degree.	Aug. 13, 1895	Dec. 17, 1895	..	4	4	Alcoholism. Returned to court for trial and released. Subsequently committed a forgery. A vicious young man.
1461	M ..	49	Rape, 1st degree.....	July 6, 1893	Jan. 9, 1896	2	6	3	Died.
1633	F ..	21	Burglary, 3d degree	Jan. 31, 1895	Feb. 14, 1896	1	..	13	Demented girl. Identity discovered through inquiry of Italian consul. At his request charges dismissed, and she was returned to home in Italy.
1742	M ..	38	Burglary, 3d degree.	Oct. 25, 1895	Feb. 18, 1896	..	3	23	Not insane. Returned to court for trial, and sentenced to Sing Sing for five years.
683	M ..	68	Murder	Nov. 19, 1877	Mar. 9, 1896	18	3	20	Died.
1713	M ..	37	Assault, 1st degree.... ..	July 29, 1895	Mar. 18, 1896	..	7	19	Struck fellow-workman with a hammer suddenly without provocation. Recovered. Returned to court and released.
1576	M ..	31	Vagrancy.	Aug. 25, 1894	Apr. 13, 1896	1	7	18	A vagrant lunatic escaped from an asylum in Nova Scotia. Released by order of court, and sent to Nova Scotia by State Commission in Lunacy.
1715	M ..	32	Assault, 1st degree.....	Aug. 1, 1895	May 14, 1896	..	9	13	Recovered and released by order of court. Has made a good record since.
1596	M ..	20	Grand larceny and burglary	Oct. 19, 1894	May 15, 1896	1	6	26	Charges dismissed, and transferred by order of court to N. Y. Asylum for Idiots.
1500	M ..	42	Assault, 1st degree.... . .	Nov. 13, 1893	May 20, 1896	2	6	7	Died.
1638	M ..	36	Grand larceny, 2d degree.	Feb. 2, 1895	June 4, 1896	1	4	2	Died.
1292	M .	42	Murder, 1st degree.....	Sept. 19, 1889	July 12, 1896	6	9	23	Died.
1726	M ..	66	Intoxication	Sept. 7, 1895	Aug. 5, 1896	..	10	28	Died.
1321	M ..	33	Vagrancy..	Mar. 9, 1891	Aug. 31, 1896	5	5	22	Died.
1690	M ..	45	Disorderly	June 1, 1895	Aug 31, 1896	1	3	0	Alcoholism. Almost bed ridden from neuritis. Discharged to custody of brother.
1266	M .	66	Vagrancy	Jan. 3, 1890	Sept. 23, 1896	6	8	20	Died.
1303	M .	31	Forgery, 2d degree	Apr. 18, 1892	Oct. 31, 1896	4	6	13	Died.
1714	M ..	25	Forgery, 2d degree.....	July 31, 1895	Nov. 1, 1896.	1	3	..	A young law student Proceedings dismissed, and released to custody of friends. Improved.
1858	M ..	30	Vagrancy.....	Sept. 28, 1896	Nov. 26, 1896	..	1	28	Died.
1783	M ..	22	Burglary and grand larceny	Jan. 10, 1896	Dec. 4, 1896	..	10	24	Recovered. Returned to court and there released.

1825	M ..	35	Petit larceny..	May	8, 1896	Jan.	30, 1897	..	8	22	Died.
1891	M ..	55	Violently and dangerously insane.....	Nov.	22, 1890	Feb.	12, 1897	6	2	20	Received from Binghamton State Hospital. Improperly committed. Returned to Binghamton State Hospital. Still remains there in custody.
373	M ..	94	Arson.....	Sept.	13, 1875	Feb.	14, 1897	21	5	1	Died.
1112	M ..	42	Assault.....	Jan.	9, 1889	Mar.	20, 1897	8	2	11	Died.
1560	M ..	55	Assault, 2d degree.....	July	7, 1894	Apr.	5, 1897	2	8	28	Died.
1271	M .	55	Murder, 1st degree,.....	Apr.	1, 1891	Apr.	27, 1897	6	0	26	Died.
1826	M ..	24	Grand larceny, 2d degree.	May	14, 1896	Apr.	30, 1897	..	11	16	Charges dismissed, and patient released by order of court. Improved.
1771	M ..	25	Vagrancy.....	Dec.	30, 1895	May	11, 1897	1	4	11	Vagrant lunatic from England. Case dismissed by court. Returned to England by State Commission in Lunacy.
1678	M ..	55	Arson	May	10, 1895	June	14, 1897	2	1	4	Recovered. Returned to court and there released.
1908	M ..	39	Drunk and disorderly....	Dec.	30, 1896	June	18, 1897	..	5	18	Improved mentally, and transferred by order of court to Rochester State Hospital.
1681	M ..	40	Burglary, 2d degree.	May	15, 1895	June	25, 1897	2	1	10	Died
434	M ..	59	Assault, 1st degree.....	Apr.	21, 1877	June	29, 1897	20	2	8	Died.
1887	M ..	32	Assault, 2d degree.....	Dec.	1, 1896	July	3, 1897	..	7	2	Improperly committed. Discharged upon a writ of habeas corpus, and recommitted to Rochester State Hospital. An imbecile.
1909	M ..	23	Assault, 3d degree...	Feb.	3, 1897	July	22, 1897	..	5	19	Proceedings dismissed. Released to custody of father. Improved.
723	M ..	54	Arson	Dec.	29, 1881	Aug.	6, 1897	15	7	7	Died.
728	M ..	42	Assault, 3d degree	May	16, 1881	Aug.	22, 1897	16	3	6	Died.

* "Court" patients are unconvicted cases charged with crime but declared irresponsible by reason of insanity; and committed by order of court.

It appears from this table that the public welfare is better subserved by the patient having been declared insane than would have been the case had he been sentenced to prison. At the same time humanity and justice have been impartially served, which is the aim of the law. In many cases of homicide or of assault with intent to kill, if the prisoner is declared insane, the probabilities of his detention until safe to be at large are much greater if he is committed to a lunatic asylum, than if convicted and sentenced to prison where the average length of his detention would be for a decidedly shorter period. An insane man who fails to kill his victim is as dangerous as one who actually commits a homicide. The sane man's passion is transient, but the lunatic is dangerous so long as his delusions prevail. There are numerous instances in our population of cases still resident with us, who are placed in our custody for murders and deadly assaults committed twenty and even thirty years ago. The popular idea that the asylum is a shield, under cover of which many guilty persons escape the penalty of crime, is not often, I think, borne out by facts. On the contrary, it is difficult under the law to procure discharges. There are, indeed, some cases of petty offenses committed by weak-minded boys where a more liberal provision for discharge is desirable, so that such patients may be sent to industrial homes or schools, or even released after a period, instead of remaining in an asylum for life. In England the practice in many cases is to parole patients conditionally for a period of time during which the criminal charge still remains pending, and, in the event of misbehavior, the patient is arrested and returned to custody upon summary proceedings without trial.

It is in part the purpose of this paper to show the necessity of dealing not alone with crime, but with the individual. The old ideas of punishment and retribution are passing away to give place, where possible, to modern methods of reformation of the individual; the prolonged confinement of the habitual criminal; the protection of society; and the safe custody of the dangerous insane. Reformatory methods for the young, the commutation of sentences for good behavior in prison, the indeterminate sentence, the introduction of the Bertillon system, the establishment of hospitals for the criminal insane, are all steps turning in that direction. The chief question to be determined, before the release of degenerate and insane individuals, is whether it is safe for the community to permit such persons to be at large.

TREATMENT OF UTERINE FIBROIDS.*

BY A. VANDER VEER, M. D.,

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Mr. President, Gentlemen:

The treatment of uterine fibroids presents as interesting a chapter as can be found in modern surgery. We have been led to believe that our greatest advances in abdominal work have been in the treatment of ovarian cysts, of diseased tubes, of diseased ovaries, cystic and otherwise, also in the removal of pathological specimens, associated with all organs within the abdominal cavity, section of the intestinal tract, and kindred bold operations, and that in the progress made for the relief of such conditions as the papers presented here to-night refer to, we have overlooked the solid facts in this particular operative procedure, forgetting, somewhat, the gradual advances made, up to the point of where we can approach a case of uterine fibroid with equanimity of mind, and a comparative degree of safety, as regards recovery of the patient.

Perhaps the reason why surgeons did not advance more rapidly in the treatment of uterine fibroids was the fact that these growths were looked upon as not necessarily dangerous or particularly fatal to the patient. Patients would live, and have been known to live for a long time, with uterine fibroids, suffering much, and only, perhaps, dying as a direct result of the tumor itself, when the flow became so excessive as to produce complete exhaustion, or when some portion began to slough, and the patient died of septic peritonitis, or when sarcomatous degeneration occurred, or obstruction to the bowel or complete retention of urine caused these and many other conditions leading to death. On the contrary, diseases of the ovary proper, ovarian cysts, especially, were known to produce death. The tendency was to destroy life within a reasonable number of months or years, and the certainty of results impressed itself thoroughly well upon physicians and surgeons many years ago.

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* Read at the meeting of the Albany County Medical Society, April 7, 1897.

Undoubtedly pathologists, therapeutists and surgeons have learned much in the study of these growths by careful autopsies in the past. Within two decades we have seen them classified on the basis, as regards cure, of calcareous change, and degeneration, when this period was reached, giving the patients little trouble, it was said, and a fairly good recovery following.

We have seen much accomplished in comfort given patients by referring to the small percentage in which the metamorphosis of tissue at the menopause resulted in absorption, shrinking, gradual disappearance, and it was thought that the patient who could survive this period, suffering from a growth of this sort, was then in an atmosphere of safety, convalescence and ultimate recovery. The latter view still holds good in a small majority of cases, but when this pathology of the question prevailed how many, many valuable lives were lost waiting for the change of life.

Within my professional memory no field of surgery offered so inviting an outlook for the use of electrical therapeutics as this of uterine fibroids. Men had made brilliant reputations in the removal of ovarian cysts, but failed when they attacked uterine fibroids. Many good surgeons had the courage to operate in any form of ovarian tumor, but their courage, with their lack of knowledge, failed when it came to the surgical treatment of uterine fibroids; therefore we have seen the field of electricity thoroughly worked in this country, renewed and reinvigorated by Apostoli, of the French school of surgeons, the wave returning to America, and has had its full sway in the investigation and treatment of these cases, we may say, with a certain degree of success. Beyond a doubt electricity to-day will do good in arresting hemorrhage; in some cases of interstitial fibroids will, in some manner not altogether clear to us, arrest the tumor, bringing about a retrograde change, the patient recovering with a diminished growth and a good return to health.

As is well known, many of these cases of the interstitial form of fibroid disappear under the metamorphosis of pregnancy. The subperitoneal fibroid is not made any worse, and is found later on to be very much in its same condition.

Again, the element of pregnancy will terminate some of the interstitial or submucous forms of fibroid, at the time of delivery,

into a uterine polypus, and it is not so very infrequent to find that after delivery of the child, placenta and membranes, there is still something more, and we have to deal with a distinct fibroid that has become a polypus and removable at this time.

Again, on the other hand, returning to the subject of electricity in the treatment of uterine fibroids, we know that in some of the polypoid forms it is absolutely useless, and the same can be said of subperitoneal fibroids. I believe I am not far from right when I state that surgeons first gained courage and encouragement in the treatment of subperitoneal fibroids by removal, treating the pedicle either by clamp or ligature. This step led to bolder surgery, until gradually we have seen evolution going on in the treatment of uterine fibroids, first by medicine such as ergot, given internally, then the field carefully worked as to its hypodermatical effect, the careful regulation of diet, as to the exclusion of starchy foods and sweets, the use of electricity, the methods of enucleation, Thomas scoop, etc., Morcellement of the French, removal per vaginum, etc., and removal of selected cases by means of the clamp, this field being gradually enlarged until all interstitial and subperitoneal growths were attacked. Then, in consequence of the annoyances of the clamp, a large number of surgeons reached the conclusion that it ought to be abandoned, progress in this operation finally leading to-day to supravaginal hysterectomy, and complete removal of the uterine appendages, leaving but a small portion of the cervix, together with the vault of the vagina, or the combined operation of removing cervix and all. This operation at the present time has reached such a low mortality that we find abdominal surgeons attacking uterine fibroids in a most radical manner, realizing that their cases will go on to recovery — providing the anæmia of the patient is not too great or the tumor allowed to develop to too great a size.

The review of the treatment of fibroids is an immense field to cover. We all realize the waves that have passed along through the years of surgical successes and failures in the study of this subject. Mr. Tait startled the surgeons of the world by the statement that removal of the uterine appendages, in cases of uterine fibroids, would result in their cure. This line of treatment still holds good in a certain proportion of cases. Small fibroids — the hard interstitial, and sometimes the subperitoneal tumors — will

yield to this premature change of life that is brought about by the removal of the ovaries and tubes, but it has been found to be a complete failure in the soft myomata, and in some cases of sub-mucous bleeding fibroids.

The nature of the operation for uterine myoma will vary according to the situation and attachments of the tumor. The varieties of operation have been classified by Vautrin as follows:

1. For the removal of subperitoneal, pedunculated myomata — simple myomectomy.

2. For the removal of certain tumors encapsuled in uterine tissue — enucleation.

3. For the removal of tumors incorporated in the uterine tissue, in which it is impossible to remove the growth without opening the uterine cavity — partial amputation of the uterus.

4. For the removal of tumors with extirpation of the uterus above the insertion of the vagina — supravaginal amputation of the uterus.

5. For the removal of multiple myomata with enlargement of the uterus, in certain cases — complete extirpation of the uterus.

I would say to-day that the treatment of uterine fibroids may yet have what is called the expectant plan carried out in a few cases.

The interstitial and subperitoneal forms, hard, not growing rapidly, no hemorrhage, giving the patients little inconvenience, may be watched carefully by the physician or surgeon, and an operation not urged to too great an extent upon the patient.

Again, on the other hand, curetting of the uterus, that has within it a polypus, and associated with a uterine fibroid, will answer in a few rare cases, as will electricity in the interstitial form of uterine fibroid; but in cases where the location of the tumor is such as to produce irritation of the bladder; is such as to cause pressure upon the bowel, in any form, particularly the rectum, or in some way to produce an occasional threatened obstruction; if the tumor is growing more rapidly, and the hemorrhage is becoming more serious with each menstrual period, the flowing being almost constant, or the case becomes complicated by a pregnancy, we have placed before us but one alternative, and that is a complete removal, which can be done at the present day without great risk to the life of the patient, and ultimate

recovery. The class of cases in which pain is beginning to present, in a small fibroid, in which there is some fear that it may develop into a sarcomatous condition, these are also cases that should be brought immediately under the operative skill of the surgeon.

Again, the past history is one in which the location of the fibroid is distinctly in the lower segment of the uterus. It has filled the pelvis, it has caused months and years of constipation, obstructive as to the outlet of the pelvis, and must be considered carefully as to the possibility of full-term pregnancy and delivery. These are the cases that in the past have presented such serious statistics. The method of treatment is one that will not admit of much temporizing. The effort, somewhat in imitation of Nature, to empty the uterus at the second, third or fourth month, is accompanied with much danger. Septic conditions are so apt to follow; suppuration in some portion of the tumor — in fact, these are anything but comfortable cases to treat; therefore we have to consider whether it is not the wisest course, in view of the success attending modern abdominal surgery, to do an out-and-out radical operation. Given these conditions, of which, perhaps, the following case is but a type, it seems to me we have but one course to pursue, and that is the complete Porro operation, or supravaginal hysterectomy:

Case of Mrs. S., æt. 35; married little more than one year. I saw her in April, 1896, in consultation with her family physician. Patient in splendid health for 32 years; menstruation regular, never painful. Believed herself pregnant; menstruation irregular for past year. Supposed herself near time of delivery, and all preparations made. Middle of March, 1896, her physician told her if she was pregnant, he also believed she had an abdominal tumor, but she refused examination and treatment, being so firmly possessed of the idea of pregnancy. The doctor finally gained permission to make an examination, a few days previous to the time I saw her, and insisted there was something present besides pregnancy. When I saw her her abdomen was tense, so full that it was almost impossible to make out a clear correct condition of affairs. Left side of abdomen presented a somewhat irregular mass, lobulated, and exceedingly hard in certain places. Right side gave a more distinct appearance of an ovarian cyst.

Patient had a pulse of 110; temperature ranging from 100° to 102°; vomiting quite constantly; some trouble in getting her bowels to move. I gave a diagnosis of possible pregnancy, but considered it more particularly a case of uterine fibroid, possibly associated with ovarian cyst. Breasts presented a negative condition as to pregnancy; also neck of uterus and appearance of vagina. Operation decided upon and done at my private hospital April 4, 1896. Porro supravaginal hysterectomy; clamp used. Large fibroid, multiple in character, found; also well-developed fœtus of four months. Patient made a good recovery. Since operation has gained over twenty pounds in flesh.

For the ANNALS.

SOME NEW CLINICAL STUDIES OF INEBRIETY.

BY T. D. CROTHERS, M. D.,

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When the histories of a number of cases of inebriety are grouped and studied, the following are some of the facts which seem to be supported by very conclusive evidence:

From sixty to seventy per cent. of all these cases are traceable to heredity. That is, in this percentage of cases, the ancestors have been inebriates, insane epileptics and neurotics. This term, neurotics, should include degenerates, idiots, feeble-minded and neuropathics generally. In these cases there has been transmitted from the parents in a certain number of persons, a morbid impulse for alcohol direct; in a larger number, a strong predisposition for drugs of any kind which would relieve some condition of pain and exhaustion; in a still larger number, a mental instability and feebleness, with low powers of restoration and resistance, which have come down from the parents; in another class, retarded and defective growth of brain and body, with unbalanced organism, are the entailments of parents. These conditions may be combined or exist separately, and may appear in an almost infinite number of types, one condition being exactly reproduced in the next generation, or concealed by some other symptoms, appearing in another form. Often these defects are manifested externally, in deformities of contour and growth and mental manifestations. The use of alcohol is a symptom of cerebral degeneration in these cases. Beyond heredity, injury and

disease are traceable as causes, both exciting and predisposing, and the demand for spirits is only the symptom. In a certain number of cases, a long prodromic stage of moderate drinking precedes the excessive use of spirits; in others, the excessive use begins at once. Intoxication and poisoning is a starting point. This may be accidental, apparently, and often literally explode a train of degenerations, or develop them into a progressive disease.

The forms of inebriety are practically the same as those noted in insanities. The periodical, convulsive, epileptic form, and the delusional and confusional manias and dementias are most common. Paretic delusions of an exalted nature, of vigor, strength, health and full restoration, also full power never to use spirits again, are common to nearly all cases. These delusions resemble those of general paralysis, only are less prominent. Supreme confidence in the ability and power to totally abstain from all use of spirits, and to carry out any line of temperate conduct suggested, with a capacity to resist all conditions of surroundings and any form of strain that may come, appears with the subsidence of the drink craze. Associated with this is a reckless disregard of all precautions and natural care, also fear of danger. All experience is ignored, and this delusion continues as an unmistakable symptom of profound mental impairment. In many cases, this delusion of power and strength is the clearest proof of mental disease. Another common symptom exists of trying to use spirits moderately, and is the same paretic delusion which, notwithstanding the continually repeated effort and failure, is never diminished and never checked. Experience makes no impression, but rather increases the faith that success will follow such efforts. In most of these cases the delusion remains during life. Probably the example of persons, who for some physical reasons unknown, are able to use spirits in small quantities for a life-time, keeps alive this faith, and the popular errors of the value of alcohol as a beverage assist in the same way.

Nearly all these cases develop degrees of moral palsy, which may be described as a deficient sense of right and wrong, of duty and obligation to others, illustrated in untruthfulness, immorality, dishonesty and intrigue. The higher brain centers which control and form character are broken up; and this, together

with delusions of grandeur, is very significant of profound impairment of the brain. An examination of the inebriate with instruments of precision, shows that all sensation is impaired; sight, hearing, taste, smell, touch, muscular, and sensations of heat and cold are lowered and palsied; memory, ideation, attention, time reaction, and perception, are diminished and enfeebled.

The faulty delusional reasoning follows naturally from the operation of the faulty senses. The heart and other organs show similar derangement. These palsies can be measured and studied with instruments, and their teachings are exact facts, not opinions. The inebriate may continue for a long time with these palsies unrecognized, except by his intimate friends. I have found inebriates who for years have done business and passed as sane, competent men, with profound palsy of the senses and brain activities, who were literally automatons, doing what they were accustomed to, following familiar lines of thought and conduct without the slightest mental effort. A slight change and variation, and their condition would have been apparent. A comparison of the histories of inebriates reveal a great uniformity of causes and lines of development, progress and termination.

The popular opinion of so-called moral causes finds no support from the clinical facts. Contagion and environment are minor elements, and the use of spirits is not always a cause of inebriety. It may explode, concentrate and give direction to degenerations, latent or apparent in the organism; but previous favoring soils and conditions must exist, or the use of alcohol will seldom develop into inebriety. In a number of cases, degenerations dating from typhoid and other fevers, and recently, from severe attacks of influenza, have preceded the inebriety. A period of invalidism following disease, merges into the excessive or moderate use of spirits. The latter sooner or later becomes chronic and excessive, and spirits are often used at first as a medicine. In the former distinct paroxysms of drink excesses are more common. Many of these cases are preceded by nutrient and digestive disorders; others by neurotic and psychical disturbances. Another class is clearly referable to injury, particularly when associated with shock and profound exhaustion. Railroad accidents where the psychical element of fear, alarm and sudden

profound emotional disturbances are present, are often followed by inebriety. Great mental and physical strains and drains, long periods of overwork, or underwork, with nutrient excesses, and general physical neglect of the care of the body precede the outbreak of inebriety.

There are cases of inebriety which break out suddenly, following some prolonged strain, and are clearly insanities. The subsidence of the drink craze brings into prominence manias and dementias. In some cases the continuous use of alcohol marks these acute symptoms; and in some cases where alcohol is used continuously it seems to prevent the outbreaks of violent manias. In some instances the removal of alcohol is followed by epileptic attacks, and the return to spirits breaks them up. The subsidence of the drink symptom brings out many unexpected phases of disease. In the treatment, remedies directed to the drink symptom alone are not curative. The subsidence of this symptom by chemical restraint is the same as checking pain by opium. This drink symptom is, in many cases, self-limited, and disappears. Public opinion attributes this to the last pledge or prayer, or conversion, or counsel, or drug, or specific. In reality, some physiological change has taken place, and the drink craze has died out. Restoration has not occurred, only a change of symptoms.

Familiar illustrations are seen in cases of delirious reformers, wild agitators, unusual criminals, strange, erotic paranoiacs and many others who have an early history of severe inebriety, and sudden, so-called cures. The specifics and prescriptions which destroy the craze for drink in one day, or four weeks, are empirical. Hospital treatment extending over long periods, where the causes may be studied and the rational means applied for their removal, is the only scientific method of cure.

Statistics show that, from hospital care and study, the causes and the progress of the case and present condition can be known, and suitable means used to remove and restore the person to health again, in from twenty to thirty per cent. of all cases. These figures describe the present condition of cases which have been treated from twelve to eighteen years ago, and approximate the possible final cures of such cases. Statistics show that inebri-

ety is often a symptom of some reflex condition or exhaustive irritation, which, when discovered and removed, constitutes a cure. The following are some instances:

An army chaplain had a wound in his head. He drank to stupor at intervals for eight years, then went to a hospital; a section of the skull was removed by the trephine, and he recovered and remained temperate until death ten years later. I have seen a number of cases where anti-syphilitic treatment broke up the inebriety, and ever after large doses of mercury were practically a specific for the drink symptom.

Change of life in women, and breaking down from age and overwork in men, are marked by inebriety, which yields readily to the quiet and exact hospital care and treatment. A bright editor of eminence recovered from inebriety after a residence in a hospital, with change of conditions of living and proper sleep at night. A large number of cases recover by the use of the Turkish bath, which seems to eliminate auto-intoxications, and in this way remove the exciting causes of the drink craze. While the use of alcohol may both intensify and produce morbid states, clinical studies show that the removal of spirits is not always the removal of the cause. Other and more profound disturbances must be treated.

Finally, statistics and clinical studies of cases make it clear beyond all doubt, that inebriety is insanity, obscure and masked; starting from the same range of physical causes; following the same lines of progress, and curable in substantially the same way.

Into this present realm of theories and empiricism, where moral causes and moral remedies, with specifics and superstitions, supported by ignorant dogmatism, exist, science has only recently entered. But already the facts observed show that inebriety is a disease, following exact lines of cause and effect, controlled by laws which may be known and followed, and neutralized and prevented.

The great drink problem will be solved from a medical point of view, not far away, and its present mystery disappear.

Clinical and Pathological Notes.

A Case of Primary Round-celled Sarcoma of the Epididymis.

FROM THE BENDER HYGIENIC LABORATORY.

The specimen was sent to the laboratory by Dr. Dayton L. Kathan, of the Ellis Hospital, Schenectady. The history, in brief, was that the individual from whom the growth was taken — a man of about 50 years of age — had received an injury to the testicle two months previous to its removal, after which injury he immediately noticed a painless swelling of the organ. The previous and family history of the individual threw no light upon the case.

The specimen consists of an enlarged testicle and epididymis, and an overlying portion of shining cicatricial tissue, suggesting, from its position, diseased scrotum. The testicle itself is of the size of a pigeon's egg, and is much less diseased than the epididymis. What at first seemed to be diseased skin is undoubtedly part of the outer layer of the tunica vaginalis, which is thickened, and presents a shaggy outer surface from torn adhesions and a smooth inner surface, the vessels of which are dilated near its reflection to the inner layer. The testicle is greatly compressed by the enlarged epididymis, and where it shows actual disease this is in the immediate neighborhood of the epididymis.

The disease in the testicle consists mostly of the presence of a tissue which is of a homogeneous white color, somewhat shiny, and resembles cicatricial tissue. No miliary tubercles can be seen in the organ. The epididymis is four or five times its natural size, and much changed. It consists of a firm, whitish, homogeneous tissue resembling cicatricial tissue, in which are imbedded caseous-looking masses, generally of about pea size. It has very much the appearance of a tubercular epididymis. The cord seems to be scarcely, if at all, thickened.

Microscopical Appearances. — The structure of the epididymis is only to be made out here and there in the form of much compressed cross-sections of tubules. The normal structure is, for the most part, replaced by new growth, which is composed of small round cells. The cells have a small amount of protoplasm and rather deeply-stained vesicular nuclei. In places there is practically no connective tissue between them. In other places

there is a fair amount in the form of narrow bands. At one or two points large areas taking the eosin stain are present. They contain an extremely small number of nuclei, and are evidently necrotic areas.

Remarks. — The specimen is an interesting one, in the first place, on account of its rarity. While primary sarcomata of the testicle are comparatively common, particularly in undescended testicles, primary sarcomata of the epididymis seems to have scarcely ever been reported. In looking over the index to the surgeon-general's library and the "Index Medicus" we found but one case — a spindle-celled sarcoma — reported by Edwards to the Pathological Society of London.

The case is likewise of interest on account of its direct relation to traumatism. The sarcomata are the class of new growths with which traumatism has been most intimately associated. As a rule, the connection has been most intimately proved between traumatism of bone and sarcomata, there being two or three instances on record where sarcomatous new growths have developed in the callus of a healing fracture. The connection between the traumatism and the new growth in this case was so direct that one is almost compelled to believe that a direct causative connection between the two existed. The resemblance of this new growth to tuberculosis of the epididymis was quite striking. The fact that the disease had evidently originated in the epididymis and not in the testicle, and the presence of areas which, to the naked eye, resembled areas of caseation, was very misleading.

GEORGE BLUMER.

Local Treatment in Gynæcological Practice. — Although surgical methods have largely outstripped other forms of local gynæcological treatment in the progress of the last few years, there remains a large number of diseases in which less severe methods are indicated. Cervical endometritis, ulceration and hypertrophy of the cervix, retroflexions with adhesions, and chronic infiltration or inflammation of the tubes or ovaries, are successfully treated by local applications, combined with hot douches and tonic medicines. It may be said without reserve that the local treatment is the important feature of the care of this class of diseases, and that the remedies for internal use, prepared to meet

the demands of patients, who, from necessity or whim, cannot place themselves under the skilful treatment of a physician, have completely failed of their purpose. Many different preparations for convenience of local use have been presented, and may with great advantage be used. During the last three months I have made a test of the efficacy of Micajah's uterine wafers in my service in the Albany Hospital, and submit reports of the following cases:

Case I. Mrs. H., aged 37. Complained of backache and pain in left iliac region of abdomen; some leucorrhœa. Constipation and dyspepsia. Examination disclosed a much hypertrophied cervix, with catarrhal endometritis and a laceration extending up left side. She was treated with the usual local application for a time, with partial success. I then used a wafer in conjunction with the other treatment, and the relief was well marked, resulting in entire relief from the pain, which was the object desired. A cure cannot be effected without repairing the laceration.

Case II. Miss H., aged 30. Endometritis, with erosion on anterior lip. Had been under treatment for six weeks, with some improvement. Used Micajah's wafers with the usual treatment. Improvement continued and erosion healed.

Case III. Miss M., aged 28. Cervical endometritis and congestion of tube and ovary on left side. Pain and soreness on exertion. Anæmic. Was given tonics and boro-glyceride tampons to hold Micajah's wafers in position. Improvement occurred, but she relapses on ceasing treatment.

The cases cited were unfortunately not the best for such a test, but in the limited field in which the trial was made the results were quite satisfactory, and I should be inclined to use the wafers further, and to consider them favorably for self-medication where the direct application by a physician could not be available at all, or only occasionally. G. E. LOCHNER.

Editorials.

Nursing the Insane.

In the *Chicago Record* of recent date appears a contribution upon this subject by Miss Emily MacDonnell, Superintendent of Nurses in the Albany Hospital. Miss MacDonnell refers to the progress in the treatment of the insane, and quotes Jacobi's statement of a century ago, that the proper care of

the insane would not be attained until the sympathy and interest of women care-takers are obtained. A plea is made for greater respect for the nurse and her work, and it is pointed out that the highest order of intelligence is required for this especial department of nursing. It is suggested by Miss MacDonnell that some portion of the third year of study now generally required by training schools for nurses be spent in the study of nervous patients. In connection with the two-year system a post-graduate course of a third year in a hospital for the insane would add very much to the value of the nurse.

The advantage to the nurse of the discipline arising from the care of insane patients lies in the better recognition and toleration of the mental peculiarities incident to any form of illness. It has already been seen, and this is the point upon which Miss MacDonnell lays especial stress, that nurses so trained have proved less mechanical and more thoughtful of the subjective sensations of the patient.

Narcosis Statistics.

Gurlt, in the *Archiv für Klinische Chirurgie*, publishes the result of the narcosis statistics for 1895-6 and 1896-7. The statistics cover 61,605 cases, in which the anæsthetics used were chloroform, ether, chloroform and ether mixture, Billroth's mixture and ethyl bromide. The figures are as follows: Chloroform, 39,627 narcoses and 28 deaths; ether, 14,092 narcoses, with four deaths; ether and chloroform, 5,064 narcoses, with one death; Billroth's mixture, 996 narcoses and one death; ethyl bromide, 1,826 narcoses and no deaths — altogether 61,605 narcoses, with 34 deaths, a mortality of one in 1,811. The author then remarks on the different accidents which occurred, as follows: "*Chloroform* — Asphyxia occurred with all mixtures at times. Cramp of the glottis, necessitating tracheotomy, occurred twice. Pneumonia occurred in several cases. In two a very marked parenchymatous nephritis resulted. Deaths occurred at all ages, and though in some cases heart or chest affections were found *post-mortem*, to account for death; in other instances no such lesions were found." *Ether* — There was nothing particularly new to note. Deaths from bronchitis and pneumonia occurred as usual. The ether exanthems were noted

occasionally both in children and adults. Tremor was noted after ether in one case, and in the case of an epileptic regular convulsive seizures occurred during narcosis.

Nothing noteworthy was to be remarked concerning the mixed forms of narcosis.

The report ends with a detailed account of the cases from the different surgeons, from whose statistics Gurlt's paper was made up.

State Medicine.

EDITED BY HARRY SEYMOUR PEARSE, M. D.

A National Health Board. — In the year 1891 the American Medical Association appointed a committee for the purpose of securing the passage of an act of congress creating a National Health Board, with a Secretary of Health, the latter to be appointed by the President and to be a member of his Cabinet.

At the meeting of the association in 1896 this committee reported that it was impossible to attempt to secure the passage of an act creating a Cabinet officer, and recommended the passage of a bill creating close co-operation between the Marine Hospital Service — in itself a department of public health — and the various State and territorial Boards of Health. The report was accepted and the recommendations adopted. Accordingly a bill was drafted by the committee, but it was impossible to get Congress, during its last session, to act upon the measure.

At the 1897 meeting of the association the committee was enlarged and made to include a representative from each state and territory, with instructions to use every effort to get the bill before Congress.

Thus the matter stands after seven years of labor and thought. It now remains to be seen whether Congress can be prevailed upon to take up, discuss and pass upon this measure. We fear that the committee has a very difficult task set for it. Our staid and deliberate Senate is slow in making radical changes in the government, and doubtless would be especially so when the creation of a new department is involved. The formation of such a department would be a gigantic undertaking, and upon first thought our ideas as to its workings are vague and cloudy. One

thing is certain, however; the introduction of the bill into Congress would bring about a free discussion in the medical and lay press. It would elicit the opinions of a large number of scientific thinkers and workers; the legal difficulties, if any existed, would be pointed out, and it would soon be ascertained whether the undertaking be feasible and necessary, or otherwise. In the institution of any department of government discussion is indispensable, and outside the American Medical Association there has been but little, as far as we can learn.

The measure is entitled "A Bill to Establish a Department of Public Health, and to Define Its Duties." It is of considerable length, consisting of thirty-six sections. Omiting the details incident to the organization, management and minute duties of such a body, which are embodied in the bill, its most prominent provisions are:

First — That there shall be established a Department of Public Health, the duties of which shall be to collect and diffuse information upon matters affecting the public health, including statistics of sickness and mortality in the several States and Territories; the investigation by experimental and other methods of the causes and means of prevention of disease; the collection of information with regard to the prevalence of infectious, contagious and epidemic diseases both in this and other countries; also the causative and curative influence of climate upon the same; the publication of the information thus obtained in a weekly bulletin; the preparation of rules and regulations for securing the best sanitary condition of vessels from foreign ports, and for prevention of the introduction of infectious diseases into the United States, and their spread from one State into another, which rules, when approved by the President of the United States, shall, in so far as they are consistent with the existing laws, be adopted and enforced as quarantine regulations at the various ports of entry in the United States, and so far as applicable to interstate commerce to prevent the spread of disease from one State or Territory into another or the District of Columbia, be, and become additional regulations thereof; the advising and informing the several departments of the government on such questions as may be submitted by them to it, or whenever, in the opinion of the Department, such advice and information may tend to the preservation and improvement of the public health.

Second — That the Department of Public Health shall be under the control and management of a Commissioner of Public Health; said Commissioner of Public Health shall be appointed by the President of the United States, by and with the advice and consent of the Senate.

Third — That the Department of Public Health hereby created shall succeed to all the powers and duties now and heretofore conferred upon the Marine Hospital Service.

Fourth — That said department shall also, by coöperation with the proper health authorities of foreign nationalities and municipalities, endeavor to extend to the United States a reliable system of international notification of the existence and progress of such diseases as cholera, yellow fever, typhus fever, smallpox, bubonic plague, or any other dangerous or contagious disease which may, in the judgment of the department, seem advisable to consider.

Fifth — That the department shall, when in its judgment it may deem it necessary and proper, make such additional rules and regulations as are necessary to prevent the introduction of infectious and contagious diseases into the United States from foreign countries, or into one State or Territory, or the District of Columbia, from another State or Territory or the District of Columbia.

Sixth — That it shall be unlawful for any merchant ship or other vessel, from any foreign port or place, to enter any port of the United States, except in accordance with the provisions of this act.

Seventh — That any vessel, at any foreign port, clearing for any port or place in the United States, shall be required to obtain from the consul, vice-consul, or other consular officer of the United States at the port of departure, or from the medical officer, where such officer has been detailed by the President of the United States for that purpose, a bill of health in duplicate, in the form prescribed by the Department of Public Health.

Eighth — That whenever the evidence shall appear conclusive to the President of the United States that cholera, yellow fever, typhus fever, typhoid fever, smallpox, diphtheria or other plague, exists in any State or Territory, or in the District of Columbia, to such an extent that there is great danger of the spread of such disease into other States, Territories, or the District of Columbia, by means of vessels and vehicles engaged in the transportation of goods, passengers, and the United States mail, by land and water, or by persons traveling, on foot or otherwise, he is hereby authorized to call together the Commissioner of Public Health and advisory council to take such action as may be necessary to prevent the spread of such disease from one State or Territory into another, or from any State or Territory into the District of Columbia, or from the District of Columbia into any State or Territory.

Ninth — That all other acts or parts of acts, inconsistent herewith, or repugnant to the provisions of this act are hereby repealed.

We regret that a limited space prevents us from quoting the provisions of the bill more extensively, but trust that enough has been given to show the scope and power of such a governmental department.

There is no doubt whatever that the United States are greatly in need of an organized body, with the authority of the government behind it, to protect the sanitary, quarantine and health interests of their people; but the question is, Can the workings of such a body be adjusted so as not to conflict with an admirable Marine Hospital Service? It ought not to be impossible.

The *Medical Record* of October 30th, 1897, quotes from a paper by Dr. Warren E. Anderson, of Pensacola, formerly a member of the Florida Board of Health. Dr. Anderson favors the creation of a National Health Board, with essentially the same powers extended in this bill. He says "that a failure on the part of the Federal Congress to provide the citizen with adequate protection against the invasion of imported disease, and the prevention of the recurrence of such scenes as are being enacted along the lower Mississippi Valley and the Gulf coast, would be regarded as a national calamity."

The promoters of the cause should be heard by Congress, and when once the bill is presented, it should be given the consideration that its great importance entitles it to. If destruction to life, property and business interests, such as referred to by Dr. Anderson, can be avoided by legislative enactment, and we believe it can, then it is the duty of Congress to enact the laws necessary to do it. If a National Health Board would be the means, let us have it without unnecessary delay.

Through English Eyes. — In the second series of remarks under the title, "Salus Populi Suprema Lex," appearing in the October number of the *London Public Health*, the following reference is made to one of our administrative institutions, and needs no further comment:

"We have suggested that it might be desirable under certain circumstances to transfer the sanitary supervision of a district to special commissioners. Rightly or wrongly, there is a prejudice to such form of administration in this country, but no such objection exists in the United States, or at all events in New York State. Dr. Herman Biggs, in his address before the British Medical Association, delivered at the meeting in Montreal, described the constitution of the Board of Health of New York City, which board is practically autocratic and governed by medical experts. Dr. Biggs alluded to the prominent position of England as a pioneer in sanitation, but we may well ask whether that position has not been lost by us, in sanitary administration at least, if not in sanitation?

A republic is generally deemed to be a form of government which allows a more or less complete independence of action to the individual. Yet we see that the citizens of New York have surrendered themselves to the guidance and rule of the medical profession. We are curious to know how this has come about. The 'politician' on the other side of the Atlantic is generally supposed to be more of a lobbyist than a legislator. Nevertheless, the constitution and powers of this Board of Health — which will soon control the interests of some three millions of citizens — afford evidence of legislation far in advance of any existing in this country. The comparison between the sanitary control of New York and that of London does not appear to us to be in favor of the latter city."

Meritorious Progress. — At the last meeting of the New York State Board of Health, held in New York City, October 25th, 1897, the following resolutions were passed:

"*Resolved*, That the secretary be instructed to communicate with all the manufactories of animal serums intended for administration to human beings and animals in this State, and inform them that on and after the first of January, 1898, the State Board of Health will require that their products shall be examined by the board at frequent intervals."

In the course of the discussion preceding the resolution, Dr. George B. Fowler, of New York, said that he knew of two men whom he thought were qualified and properly equipped to carry on these investigations — Dr. Dillon Brown, of New York, and Dr. W. H. May, of Syracuse. He also said that the labels of these men, when placed on the different serums, should have the indorsement of the State Health Board.

We presume that under "animal serums" the board will eventually include diphtheritic and tetanus antitoxin, antistreptococcus serum, tuberculin, vaccine virus and the numerous serums used in cancer, typhoid, etc., if they are placed on the market. At the beginning probably only the more important, and those most extensively used, will be investigated; but it is to be hoped that in time the board will control the quality of all the animal serums as they are offered for sale.

This step has been discussed in the board for a number of months, and we are especially gratified to see that the movement has taken a definite form. From time to time the ANNALS, in its columns, has recommended the State control of these serums.

Book Reviews.

Pathological Technique; a Practical Manual for the Pathological Laboratory. By F. BURR MALLORY, A. M., M. D., and JAMES HOMER WRIGHT, A. M., M. D. Philadelphia: W. B. Saunders & Co. 1897.

This book is designed, according to the authors, to be used as a guide to practical laboratory work and as a reference book to advanced workers. It is divided into sections on post-mortem examinations, bacteriological examinations and histological methods.

The section on post-mortem examinations is concise, clearly written and well up to date. Virchow's methods are, for the most part, followed, but other additional methods are introduced. We are glad to see the simple and effective method of Harke for exposing the naso-pharynx published in a general text-book.

In the chapters on bacteriological examinations we are glad to note a sub-section on the routine bacteriological examinations at autopsies—a subject which is not sufficiently appreciated by the profession and is very seldom carried out in the laboratories, either of this country or abroad. In the account of staining tubercle bacilli by Gabbett's method, we hardly think that 20 seconds is a long enough time of exposure to the decolorizing solution; 45 seconds to a minute is the time usually given. Under the head of smegma bacilli, the statement that these are decolorized by alcohol is for the main part true, but some examples of smegma bacilli are found which retain their color after such treatment. A more reliable differentiation consists in the removal of the fat which surrounds the smegma bacilli and gives them their peculiar staining reaction by saponification.

The section on pathological technique contains a well-selected list of fixing and staining methods, many of which are originated by Dr. Mallory himself.

The book, as a whole, is very satisfactory. It is well arranged and well printed. The illustrations are apt and well executed. It should answer very well the purpose for which it is designed. G. B.

An Epitome of the History of Medicine. By ROSWELL PARK, A. M., M. D., Professor of Surgery in the Medical Department of the University of Buffalo. Illustrated with portraits and other engravings. One Volume. Royal octavo, 348 pages. Extra cloth. The F. A. Davis Co., publishers, Philadelphia, New York and Chicago. 1897.

As stated in the preface of this little work, the book itself is the subject-matter, rearranged and enlarged, of a series of lectures delivered by the author in the Medical Department of the University of Buffalo. The author says that the history of medicine has been sadly neglected in our medical schools, and aims to arrange the reading matter of his work so as to bring it into the compass of a medical curriculum; at the same time he attempts to popularize the subject.

A large part of his effort, as stated by himself, is devoted to considering the causes which conspired to prevent the more rapid development of our art, and says, "that if among these the frowning and forbidding attitude of the church figures most prominently, it must not be regarded as any expression of a quarrel with the church to-day," and refers any who may take issue with his statements to President White's "History of the Warfare of Science and Theology."

The value of the work is enhanced by the simplicity of its arrangement. The chief events in the history of medicine are classified into distinct epochs. The arrangement of Renouard is used because it is considered the best and divides the past into three ages, viz.: the age of foundation, the age of transition and the age of renovation. The ages are subdivided into periods: the first is the Primitive Period, beginning with myth and extending down to 1184 B. C., the last is the Reform Period, comprising the seventeenth, eighteenth and nineteenth centuries.

History, as a rule, is dry reading, and interesting only to those who have a special liking for it. Dr. Parks has put together a lot of dry facts in a most attractive and readable form. We know of no facts in medical history which have been omitted. The style will fascinate the student of medicine and the book itself be of great value for reference.

From Hippocrates to Agnew the lives and works of the great men of the science are given with portrait copies of old and rare paintings and engravings. Many pictures of old instruments are also given.

The final chapters are devoted to the History of Anæsthesia, Antisepsis and Dentistry.

The work will prove of great value to the medical profession and of interest to the layman. H. S. P.

Current Medical Literature.

On Long Periods of Quiescence in Pulmonary Tuberculosis and the Return of the Disease after Attacks of Grippe.—L. H. Petit, in the *Revue de la Tuberculose* for October, 1897, reports six cases in which there was apparent cure of pulmonary tuberculosis lasting over a long period, with a return of the disease after an attack of influenza. All of the cases presented characteristics more or less in common. First, an attack of tuberculosis in childhood, or sometimes later, followed by cure, and then a second attack a long time afterward. Secondly, an intermediate period of greater or less length of good health, and thirdly, and finally, the return of the tuberculosis following the grippe, this return usually occurring in an insidious manner.

The author brings up the question (1) as to why the tuberculosis had healed after the first attack. In answer to this, he cites the apparent antagonism between tuberculosis and joint disease, and states that in all his cases the individuals gave a history of hereditary joint troubles—rheumatism, gout, etc. In the second place, he asks why has the cure

of tuberculosis lasted so long, and answers this by the statement that it is on account of the non-appearance of the influenza until the winter of '89-'90. He states that all these cases began to show signs of return of the tuberculosis after this time. In answer to the question why the return of the tuberculosis occurred after grippe, he states that in his cases there are reasons referred both to local and general conditions. The local conditions, he imagines to be the influenzal bronchitis; the general conditions, the general depressing effect of the disease.

In concluding, he calls attention to the fact that a number of cases have been reported where apparently healthy individuals suddenly showed signs of tuberculosis after an attack of grippe. He thinks that these cases resemble the cases which he just reports, and that they probably had an attack of tuberculosis in childhood, which subsequently healed. G. B.

Practical Therapeutics.

Salol in Typhoid Fever.—Herbert Bramwell, in the *British Medical Journal*, October 23, 1897, has had most gratifying results from the use of salol in typhoid fever. He gives it in doses of 5 to 10 grains every four hours until the urine is tinged, and then only sufficient to maintain the faint coloration of the urine. It has invariably checked the increasing fever and brought about a slow but steady defervescence and improvement in all the other symptoms. Cases which appeared of a severe type have been so modified as to become mild and uncomplicated, while several mild cases of undoubted typhoid, as proved by the rash, have been completely aborted. The drug should be administered in the powdered form and not compressed, as in the latter case it frequently passes through the intestinal tract unchanged.

Elimination of Lead by the Administration of the Bisulphite of Sodium.—Peyron (*Centralblatt für innere Medicin*, 1897, 42) claims that the administration of the bisulphite of sodium produces a rapid elimination of lead from the system. A daily dose of 5-6 grains in lead poisoning, where only traces of lead were found in the urine, induces the excretion of as much as 72 mg. in a day.

This remedy acts very rapidly, as the maximum excretion of lead occurred 2-3 hours after its ingestion.

Indications and Contra-indications to the Treatment of Chronic Alcoholism by Strychnine.—Combernale (*Gaz. hebdom. de méd. et de chir.*, 1897, No. 39) believes that this treatment, which consists in the hypodermatic injection of 2-5 mg. of strychnine daily, is most serviceable in cases with loss of sleep and appetite, hyperæsthesia of the skin, neurasthenic symptoms, a desire to drink with few or no attacks of acute delirium. It is contra-indicated in marked degeneration of the nerve centers and other organs, and in impaired circulation of the liver and kidneys. In the latter condition an acute strychnine poisoning could easily follow.